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PREVENTION AND GENERAL AFTER TREATMENT OF CARDIAC RHEUMATISM IN CHILDHOOD.[1]

By M. J. PLOMLEY, M.B., Ch.M. (Sydney),
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THE object of this paper is to bring before you an ailment met with in all hospitals but mainly in the children's hospitals, namely "rheumatic fever" with especial reference to its cardiac manifestations, with the intention of instituting a discussion on methods of prevention of the disease, methods of minimizing the effects of the disease when contracted and of dealing with rheumatic (cardiac) cripples.

Rheumatic Infection in Childhood.

Last year Dr. F. J. Poynton made use of the following words: "There is probably at the moment no issue more important than the preventing of acute rheumatism in childhood." This refers especially to Great Britain. Though in New South Wales we are not so afflicted as in England, statistics show that rheumatism is far too prevalent and that there are many sufferers from the cardiac manifestations of this ailment. While the prevention of acute rheumatism is mainly in the hands of the public health officer (housing and general hygiene) and of the school doctor who meets the patient in the precardiac stages, it remains for the general practitioner so to treat the sufferers from this disease as to prevent the very numerous recurrences and to banish from our wards the distressing forms of chronic cardiac rheumatism in patients whose sufferings normally end in early death. Also we should be able to place those patients with crippled hearts where they may become self supporting or at the least be enabled to lead a life of comparative activity. After puberty the tendency to cardiac rheumatism diminishes to a considerable extent, so that if we can tide the rheumatic child over the school age period, we can hope that further damage to the heart will not occur.

Manifestations.

The chief manifestations of acute rheumatism as it occurs in the school age (from five to fifteen) are: (i.) Carditis, (ii.) chorea, (iii.) arthritis, (iv.) tonsillitis, (v.) anæmia, (vi.) chronic pyrexia. The

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on June 24, 1926.

disease often begins with an ordinary sore throat, *morbus cordis*, and a mild arthritis or as chorea with *morbus cordis*.

To give some idea of the prevalence of the disease the following figures are taken from the hospital records for the three years, 1923-1925. There have been one hundred and ninety-five children with acute rheumatism, forty-seven with cardiac affection and one death. This ratio of 1:4 is, I think, too low; it refers only to those cases in which endocarditis is definitely referred to in the diagnosis columns.

In addition there have been eighty-eight children with chronic rheumatic endocarditis admitted and readmitted, some as often as four times in twelve months, with thirty-one deaths.

In New South Wales during the five years, 1920-1925, the total number of deaths from acute rheumatism (I assume that death was due in practically all these cases to carditis) was for all ages 406. Of these 190 occurred in the five to fifteen year period, that is almost 47%. The remainder should include quite a large proportion of cases of recurrence of a disease contracted in a mild or insidious form during the school age.

These figures are for deaths due to acute rheumatism and do not include deaths due to cardiac failure. In England and Wales it has been estimated that one twenty-fourth of all deaths is due to rheumatism contracted in childhood (five to fifteen years). Further 12% of all deaths are due to heart disease and 60% of this 12% followed on rheumatic fever.

These figures show that rheumatism and rheumatic cardiac diseases are most important causes of death and we know that the disease usually begins in the school age period.

I have not been able to get figures showing the amount of invalidity (pensions) due to rheumatic cardiac disease for New South Wales.

In the Children's Hospital we get definite groups of cases: (i.) Acute carditis, without previous history except perhaps of tonsillitis. Occasionally the patients die in this first attack; often they recover with more or less permanent damage, usually more. (ii.) Infections with sore throat, mild joint or "growing" pains and light cardiac affection. The patients may be quite cured or may return later with more advanced cardiac disease. (iii.) Chorea without cardiac affection; the heart may escape altogether. (iv.) Chorea with cardiac affection, often very mild. But these patients may return with another attack of chorea or more often with an attack of acute rheumatism with carditis. (v.) Patients with recurring attacks of endocarditis or pericarditis or both, with fever, but often without joint affection or other signs. In these cases the disease has probably never ceased, but has kept smouldering with exacerbations, resulting from the first group infection. (vi.) Cases of vague ill health. (vii.) Cases with persistent slight rises of temperature to, say, 37·5° C. (99·5° F.) occurring at irregular times during the day, yielding a chart for weeks and not dependent on dental or nasal or tonsillar sepsis or tuberculosis. (viii.) Cases with definite anæmia.

Treatment.

Prevention.

The first line of treatment should be that of prevention and in this housing and general environment are all important. It is necessary to provide fresh air, sunlight and absence of damp in houses. If we are to believe that acute rheumatism gains entry through the throat, parents must be educated up to the necessity for early and thorough treatment of unhealthy tonsils, especially when there is a definite history of rheumatic infection in one or more members of the same family. Great attention should be paid to clothing; the mental activities should be restrained and no minor symptoms should be neglected. There should be some attempts at "relative isolation."

The increased liability of members of rheumatic families to rheumatic infection may be put down to: (i.) Hereditary predisposition; (ii.) environment, including cold, dampness of house, soil, playground, poor hygiene and insufficient clothing and conditions favouring tonsillitis; (iii.) direct infection.

Early Diagnosis.

The "second line" is in early diagnosis and this often rests with the school authorities and doctors. Many cases of rheumatic infection go on to carditis or an early carditis remains undetected, because too little attention is paid to attacks of anæmia, of tonsillitis and growing pains and of mild continued fever. The heart is not examined for dilatation with its rapid feeble pulse, feeble cardiac impulse, increase in dulness to the left and the faint systolic murmur with its accentuated pulmonary second sound. Too many of these patients are treated for a few days only and then allowed to return to an active life. The result is another attack of rheumatic carditis. The parents think that the doctor is an alarmist or the child resents control and bed. Again in hospital the tendency, where the number of cots is limited, is to return these children far too soon to unhealthy homes and to the ordinary activities of childhood.

Treatment of the Acute Attack.

Then comes the treatment of the disease itself. The old dictum of at least six weeks in bed in blankets should still be insisted upon. All signs of active disease, such as raised temperature and rapid pulse, must have entirely disappeared before the child is allowed up and then close observation for at least four weeks should be insisted upon. Drugs to be used are the alkalis, sodium salicylate or the ethyl ester of paramethyl-phenyl-cinchonic acid, as I believe "Agotan" is called. Lately I have used polyvalent streptococcic vaccines, proceeding very cautiously in the case of children with smouldering cardiac rheumatism, with results that encourage me to continue. There should be good food, iron and arsenic or cod liver oil and attention should be

directed to the proper care of teeth and tonsils. Return to exercise and school must be very gradual. Much must depend on the thoroughness of the treatment in the first attack. If the patient has a definite cardiac affection with an occasional rise of temperature, it is often found that a return home is almost immediately followed by a further appearance of symptoms, even though the child had been up and about in the ward for weeks without trouble showing itself.

Treatment of the Infection.

Others again react at once to any exertion with a rise of temperature, an increase in the pulse rate and the dilatation (in other words, an exacerbation of the disease itself). It is in this class of case that special recovery hospitals, convalescent homes and follow-up treatment are very necessary. For some time past all patients with cardiac rheumatism discharged from my beds have been instructed to report at regular intervals after full instructions as to food, clothing, rest and so forth have been given to the mother. Before discharge in some cases infected tonsils have been removed even in the presence of a definite cardiac affection. Any rise of pulse rate, rise of temperature or sign of ill health, such as pallor or anorexia, demands a careful examination of the cardiac condition and the child may be readmitted. Sending these children to convalescent homes (or their own homes) situated close to the sea or tidal waters has done little good. In fact some have immediately shown signs of exacerbation or recurrence of the rheumatic condition, though while in the Royal Alexandra Hospital for Children itself the patient has been apparently well for weeks. My figures are too small to speak authoritatively on this point, but every patient of mine sent to Canonbury and many sent to Collaroy have had to be sent back to hospital, because of a lighting up of the disease, sometimes very acutely. To my mind for the adequate treatment of these children some form of follow-up system is essential and for what I call the smouldering type of the disease, a convalescent home such as we have at Collaroy, but situated inland, well above sea level, with good subsoil drainage. Here there could be a certain amount of schooling and for the "cured" child with damaged heart training in such trades or occupations most suitable for his condition. With the improvement in general health there would be a lessened tendency to recurrence nor would there be any competition with more normal children either in study, play or outdoor work. It is almost a certainty that these children with smouldering infections, no matter how long under treatment in hospital, will return in a much worse condition, often to die, if sent from the wards to unhygienic or rheumatic surroundings. After months of hospital treatment, an apparently cured child will return perhaps in a few weeks with a fresh attack and will within a short time die.

An attempt at active immunization with suitable vaccines should be tried with streptococci isolated from rheumatic patients. At present we use the Commonwealth polyvalent streptococcic vaccine and I think that this method of treatment will ultimately prove of value to us. The main difficulty is the dosage, as some of the more chronic cases with occasional temperatures react violently to even small amounts and the return to normal is correspondingly slow.

However, certain patients with obstinate chorea or with persistent fever have recovered rapidly after a series of inoculations, though, of course, other factors may have been responsible. It is essential for the patient to be in bed with a nurse in charge when the vaccines are given.

THE ECONOMIC ASPECT OF RHEUMATIC HEART DISEASE IN THE ADULT.[1]

By C. G. McDONALD, M.B. (Sydney),
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OUR object is to consider firstly the economic wastage due or attributed to heart disease and secondly the means by which much of that wastage may be prevented.

Economic Loss Due to Errors of Diagnosis or Judgement.

A grave injury is done to the individual and to industry when we fail to distinguish clearly between a heart capable of response to every reasonable demand made upon it and one which labours under the strain. We have not yet emancipated ourselves from the shackles of the old cardiology. We set forth from the university apparently equipped with an admirable philosophic knowledge of the working of the human heart and with the first systolic murmur we meet, some of us fall by the wayside.

Sir James Mackenzie half regretted the invention of the stethoscope. Systolic murmurs heard accidentally in the course of examination, are still given a significance, in the absence of any symptoms remotely suggesting an affection of the heart which is thoroughly undeserved. The murmur is a tyrant most cruel. We and our patients still tremble in the shadow which it casts. An unwise physician whose only justification for his opinion is that he has powerfully good hearing, tells the unfortunate youth who hitherto gloried in his physical fitness, that he has a "leaking valve" and that he must never run, hop, skip or jump. The poor child, aching to play with his mates, but under the vigilant eye of his mother who fears that the least violent exertion will crucify her son; the youth whose ambition was to build bridges or make motor cars or sail the air, but on whose heart in an evil day a doctor placed his stethoscope; the citizen of less tender years who is seized by the fear which gripped Huckleberry Finn that one night he would drop down dead in his tracks and rot—these are not

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on June 24, 1926.

idle pictures. They are fair estimates of the feelings which are engendered in our patients when we look glum and pronounce the sentence. Within the last three months I have examined a medical student who was advised in his third year to relinquish his course (good advice given for very bad reasons); a boy of thirteen who was petted, pampered and scolded in his home whenever he dared run a few yards, but who modestly confessed to me on the quiet that he had "licked four chaps at school" and was "a jolly good forward at footer" and a girl of fifteen who longed to work in a shirt factory, but was condemned to the tedium of an idle life at home. All had systolic murmurs and all have since enjoyed the work and frolic of life with the consent of their parents grudgingly and suspiciously given.

Apical and pulmonary systolic murmurs, occasional aortic systolic murmurs and cardio-respiratory "whiffs" without any evidence of abnormal distress on exertion or of cardiac enlargement are surely not to be seriously regarded. Someone has written that the wonder is not that a systolic murmur is occasionally heard over a perfectly healthy heart, but that the flow of blood from chambers of various sizes through valves of varying structure is not accompanied with hissings and roarings in every case. It may be that these systolic murmurs heard over the apex are due in some cases to slight degrees of regurgitation through the mitral valves, but the very absence of distress shows that the heart has used its wonderful powers of recovery to accommodate the leak. In any case the leakage must be small, since the left ventricle shows no appreciable enlargement.

The tyranny of the murmur is such that the whole of our attention tends to be focussed on the valves. We think in terms of leaking valves. The very names we give to diseases of the heart, mitral stenosis, mitral regurgitation, aortic regurgitation, have reference to the valves only. We have ignored the essential part of the cardiac mechanism—the heart muscle—except in so far as it is concerned in the physics of adjustment to the requirements of the disordered valves. We tend to forget that when acute rheumatism attacks the heart, it inflames the myocardium and sometimes the pericardium as well as the endocardium. The term "carditis" is the accurate one and yet we seldom or never use it.

The problem confronts us occasionally in such a disease as mitral stenosis. About five years ago I saw on one afternoon at the Royal Prince Alfred Hospital two young women of approximately the same age suffering from mitral stenosis. One patient (A) had been treated for acute rheumatism three and a half years previously when her medical attendant told her that her heart was affected. The second woman (B) had been treated for the same affection and had received a similar intimation three years before. Both women had well developed presystolic murmurs. The left ventricle of A was not enlarged, the apex beat being well within the normal limits. The left ventricle of B was only slightly enlarged, the apex beat being palpable just outside the nipple line. Yet the contrast in the two was remarkable. The first patient was able to play second grade tennis without distress. The second had lost her voice, was coughing blood, was breathless and cyanosed. How can we explain these differences except on the assumption that the myocardium of B was more or less irreparably damaged, while that of A had survived to such a degree that the left auricle could hypertrophy and project into the ventricle through the stenosed valve sufficient blood to maintain an adequate circulation?

But if the musical charm of a murmur sometimes lulls our judgement into coma, we are just as prone to error in our estimation of the significance of cardiac enlargement. In mitral regurgitation where the leakage is large and the heart muscle is fit to bear the strain, the left ventricle dilates as a physiological necessity. During systole blood regurgitates into the left auricle at the expense of the stream which should flow into the aorta. Accordingly the chambers of the heart and especially the left ventricle must receive more blood to satisfy the needs of the systemic circulation. Again the ventricle must hypertrophy to expel the greater mass of blood. This combination of physiological dilatation and physiological hypertrophy, far from being a sign of distress, is a manifestation of strength. It is only when the heart muscle can no longer hypertrophy *pari passu* with the dilatation that the dilatation becomes pathological and the symptoms of cardiac failure ensue. Exactly the same principles apply to aortic regurgitation, the only difference being that in this condition the heart enlarges downwards and outwards, whereas in mitral lesions the enlargement is chiefly outwards. The late Sir William Osler recorded the case of a physician who was known to have aortic insufficiency for thirty-five years and yet had lived an arduous life without distress.

An astonishing degree of hypertrophy of the left ventricle may occur in cases of arteriosclerosis. A music teacher whose systolic blood pressure is 220 millimetres of mercury and whose apex beat is palpable well out in the anterior axillary line, is yet able to perform his duties without the least distress.

When we consider the economic loss due to an improper appreciation of the significance of murmurs and the function of the heart muscle, we must remember the number of youths deflected from their natural avocations, the patients retained under the bed clothes or leading a life of idle ease when they might well be enjoying the basic wage and the forty-four hour week. How many thousands of pounds are lost to the State through this unnecessary idleness it is vain for us to conjecture.

Wastage Due to Maltreatment of the Sick Heart.

But if the gun of criticism must be fired at those who mistake good hearts for bad, it must with equal justice be levelled at those who apply inadequate treatment to the sick and halting myocardium. Cardiac failure is a relative term, but when the patient's heart fails to respond adequately to the ordinary demands of his habits and avocation and

breathlessness ensues, the proper place for him is bed. And he should stay there till his heart muscle has recovered its tone and is capable of an adequate response. Rest in bed for six months if necessary is indicated if the heart labours. When it has slowed down sufficiently and all signs of distress have vanished, the patient should be allowed up and his response to effort carefully estimated. Any muscle untrained to activity wastes and it is necessary to build up the reserve of the heart muscle by graduated exercise or regulated work.

Much economic loss also results from the inadequate use of digitalis. Used with greatest effect in the treatment of auricular fibrillation, the too tender and occasionally the too violent use of the drug prolongs or dissipates all chance of recovery.

The Prevention of Heart Disease.

Our main indication in efforts to reduce the high incidence of cardiac disease is to attack its chief cause. The rheumatic group of infections (acute rheumatism, "growing pains," *chorea major* and *minor*, tonsillitis and postnasal adenitis) are by no means impregnable to onslaught. The attitude of the community towards cardiac calamities is one of fatalism. Like Esther when she went unto the king, the average person says to himself: "And if I perish, I perish." And many young hearts will continue to perish until we wage warfare with a will against the primary foe and recruit the aid of the community. The necessity of adequate and immediate treatment of rheumatic fever, "growing pains" and chorea, however mild their manifestations, should be impressed on the minds of the people. It is impossible to ignore the close relationship between rheumatic infections and postnasal adenitis or tonsillitis. Efforts to maintain the health of the tonsillar and postnasal spaces of our children would appreciably reduce the rheumatic morbidity. Hitherto we have made no attempt at organization, no effort at propaganda. The community remains ignorant. The hungry sheep look up and are not fed. The New York Association of Cardiac Clinics has made some effort at organization. But in Australia we have no cardiac dispensaries, much less an association for the prevention of heart disease. For those who are and will be the victims of rheumatic carditis, the road winds up hill all the way. Only when the victim's heart breaks down under the strain, do we act as the good Samaritan. True, the individual practitioner does much. But of team work and national propaganda there is none.

In 1923 the total number of persons who died in Australia was 56,236, of whom 4,893 or 8·7% succumbed to organic diseases of the heart. Cancer claimed 9·03% and tuberculosis (all forms) 6·3%. This deadly trinity—cancer, tuberculosis and heart disease, claimed nearly a fourth of all who died. We have awakened to the dangers of tuberculosis and we are attempting to reduce its terrors by the extensive organization which is even now afoot. Cancer also is being attacked with vigour. But who has yet cared to organize an onslaught on diseases of the heart which are more amenable to prevention than cancer and just as amenable as tuberculosis?

The After Treatment of the Cardiac Invalid.

Though much may be done in the way of prophylaxis, the problem of the after-care of the cardiac invalid is more perplexing. The patient must not be pampered. It is said that Sir Walter Raleigh in the presence of the Virgin Queen scribbled on a pane of glass: "Fain would I climb, but that I fear to fall." To which Elizabeth replied: "If thy heart fail thee, why then climb at all?" But the all or nothing principle, while doubtless excellent in love, is not applicable to disease of the body. We must encourage the cardiac convalescent to climb even if he never reach the summit. On the other hand, we must be careful not to exhaust his replenished reserve. Browning wrote in "Fifine at the Fair":

> Many the loaded ship self-sunk thro' treasure-profit,
> Many the pregnant brain brought never child to birth,
> Many the great heart broke beneath its girdle-girth.

And this, alas, is "the sad tale of many a human heart."

It is essential that our patient train his heart to effort, but that he keep within the bounds of physiological response. We tell him to seek "a light job." But in the search for that will-o'-the-wisp he is like as not to lose his breath and his soul. The light occupations are few. Many a kindly employer comes to the invalid's aid and is content with his honest but restricted efforts. But all employers are not philanthropic, not necessarily from a habit of mind, but because they as well as their employees must live. This is the day of standardization. The worker is fast becoming standardized. With his hearty cooperation our politicians have standardized his hours and standardized his wage. They have not standardized his heart. The cardiac cripple who would count time by heart-throbs loses his job.

The solution of the problem would seem to lie in the readjustment of the relationship of worker and employer. Fear of the *Workers' Compensation Act* guides the attitude of the employer and he cannot be blamed if he refuses to employ a man who may within a short time become a heavy burden on industry. We need an amendment of our legislation which would permit an employer to pay to the partially unfit an amount less than the basic wage in proportion to the effort of which the worker is capable and which would safeguard him from claims of compensation for a disability from which the worker suffered prior to employment. We have bureaux of employment for the fit. We need similar institutions for the industrial cripple, where he may have medical examination and advice, where suitable employment for him can be found and where an official estimate of his cardiac condition may be made which will protect his employer from future unreasonable claims. Such a bureau would enlist the assistance of the social service departments of the general hospitals, the medical practitioners and the officers of industry. It would then be possible

to reserve the lighter occupations for those who have been injured by disease.

Industry can no longer afford to refuse the valuable aid of preventive and remedial medicine and it is our duty as practitioners of medicine to follow our patients into the workshops. They at least expect that our interest will not hold aloof. Medicine, industry and the worker have this in common—that they are all vitally interested in disease and its effect on human effort. In ever widening arcs their circles of interest intersect. The employer demands reasonable efficiency from his employee. The employee asks that while at work his health be not sacrificed. And we are or should be the arbiters of fair play.

HEART DISEASE IN CHILDREN OF SCHOOL AGE AND ITS TREATMENT.[1]

By HARVEY SUTTON, O.B.E., M.D., B.S. (Melbourne), D.P.H., B.Sc. (Oxon.),
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THE problem of acute rheumatism and rheumatic heart appears to be peculiarly important during the school ages, from five to fifteen years. Acute rheumatism is one of the few diseases most common during this period, a distinction which it shares with mumps and possibly influenza, the other common infectious diseases of childhood, measles, whooping cough, diphtheria, scarlet fever and German measles, having their chief incidence before the school age. This is well illustrated in the table.

TABLE.—RATES OF VARIOUS DISEASES PER THOUSAND ENTRANTS AND LEAVERS.

Disease.	Entrants.	Leavers.
Rheumatism	12	28
Chorea	1·5	5·5
"Growing Pains"	51	225
Total	64·5	258
Sore Throats	152	305
Measles	600	850
Whooping Cough	558	550
Diphtheria	201	200
Scarlet Fever	34	55
Mumps	180	465
Chicken Pox	240	325

There were 1,998 entrants aged six years and 1,415 leavers aged thirteen years.

In any investigation of acute rheumatism it is essential that allied manifestations, such as chorea and conditions preliminary to attacks or representing mild attacks of the disease should not be overlooked, such as "growing pains" and sore throats. The consensus of opinion is strongly in favour of regarding "growing pains" as practically a mild form of acute rheumatism. Sore throats, on the other hand, can scarcely be said to be invariably rheumatic in origin, although often associated with that disease.

In a large group of country school children organic heart defect or disease was reported in one hundred and fourteen; fifteen of these were suffering from congenital heart defect, ninety-nine had acquired heart disease probably rheumatic in origin. This diagnosis was based on the clinical finding of a systolic bruit occasionally with a presystolic element in the mitral area, its maximum intensity at the apex beat, well propagated out into the axilla and practically unaltered by change of posture or by the respiratory phases. As a rule the apex beat was little, if at all displaced and compensation was satisfactory. In the majority the affection was a typical mitral regurgitation. Mitral stenosis by itself appears to be distinctly rare, as also is aortic disease. Of these ninety-nine children sixty were boys. In only about 16% was the condition known to the parents. A definite history of acute rheumatism was obtained from 37% and of chorea from 4%. Of 29% with "growing pains" 18% gave a history of "growing pains" and no other manifestation, 11% of "growing pains" and rheumatism. Of 32% with a history of sore throats, 16% had some other rheumatic association and 15% sore throats only.

If we group together rheumatism, chorea and "growing pains" 59% gave a definite rheumatic history and if sore throats were added, 74%. No history of rheumatism was stated in 26%. Of these twenty-six thirteen had measles and whooping cough, four mumps and nine influenza. Of seven who had had scarlet fever, only one did not have rheumatism or "growing pains" and only one had diphtheria independent of rheumatism.

The majority of the children are below standard weight per height and this tendency to malnutrition and poor growth is in my opinion the earliest evidence of progressive myocardial stress. Amongst the ninety-nine twelve are noted as suffering from definite anæmia and malnutrition and ten as "nervy" or stutterers. Stuttering occurred in 8% as against an average of 0·9% in school. Undescended testicle occurred in 3%, a curiously high percentage. In school 27% are recorded as good and bright, 18% as dull and backward; both of these are high percentages.

Acute rheumatism comes under the notice of school authorities mainly for two reasons: the first is the interference with attendance which the prolonged stay in hospital may represent, and the second because of the significance of the finding "rheumatic heart." Closely associated with this is the gradual realization of the necessity for special educational facilities for certain at least of these children.

The ætiology of acute rheumatism is obscure. We are at present working amongst school children and collecting data with a view to clearing up, as far as possible, this aspect of the disease.

I think it was Sir William Osler who first definitely allotted acute rheumatism to its rightful

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on June 24, 1926.

place among the acute infectious diseases. Poynton and Paine very strongly advocate the importance of certain types of streptococci, a view which though favoured in many quarters, does not seem to have met with general acceptance. The tonsil as the port of entry has attracted much attention. No less than 30% of the patients with heart affections had unhealthy tonsils, of whom 10% had adenoids as well. In addition 11% had had operations on the nose and throat usually including tonsillectomy or a total of 41% with tonsillar defect. On these figures alone tonsillectomy appears a rational prophylactic measure which should, I consider, be carried out wherever an unhealthy tonsil is found in a child with a rheumatic history.

A good deal of controversy has occurred as to its frequency of incidence in various social grades of the population. It is difficult to assert that any clear cut statements can be made, but certainly with regard to rheumatic heart disease the incidence in the families of unskilled labourers appears very striking. It would suggest that it is only in the severe and recurrent types of the disease that environmental conditions have a distinct association.

Of the patients 33% were the children of unskilled labourers, 26% were the children of skilled manual operatives, 17% were the children of employers of town type, 18% were the children of farmers and graziers and 5% were the children of civil servants. In an analysis of thyreoid in these areas the percentages of labourers was about 15%.

Apparently, too, a much higher percentage of children were the youngest alive in the family of at least three persons. This perhaps is related to the higher living costs at that period of the life history of a family.

In comparing schools, however, from good areas and bad areas in Sydney, namely: Chatswood, Gordon, Neutral Bay, Mosman, Randwick, Ashfield, Croydon, Petersham, Summer Hill and Crown Street, William Street, Waterloo, Cleveland Street, Gardiner's Road, Mascot, Botany, Fort Street, Kegworth, Camperdown, the figures are not very different; perhaps the older children in the poorer areas are worse off. In good areas entrant school children showed a rheumatic history in 6·6% and leavers in 25·7%; in the bad areas 6·3% and 28·5% respectively. Part of this may be due to the care with which the parent's card is filled in in the better localities. It would suggest that the emphasis laid on damp and similar factors has been exaggerated and that acute rheumatism behaves in its spread like other nose and throat infections.

The action taken with regard to organic heart defect and disease in school is always to notify the parent of its presence. Where possible the parent is sent for and the condition explained. The notice when compensation is satisfactory informs the parent that medical treatment is not necessary, that exercise is useful, but that competitive games should be avoided. The parent is told that if the child is ill, a doctor should be seen without fail and that it is as a rule not advisable to tell the child of the presence of the defect. The tonsils are carefully scrutinized and when unhealthy, the parent is recommended to take the child to a doctor or hospital. Although tonsillectomy appears quite definitely indicated in acute rheumatism with unhealthy tonsils, only eleven out of forty-one children had been operated on, though 76% had seen a doctor for a rheumatic manifestation. Available opportunity for prophylactic treatment had thus been lost.

The children in whom cardiac compensation is obviously failing, are referred to a doctor at once, the parents being personally interviewed. At school two deaths are recently recorded in boys who were permitted by their doctors to engage in competitive games, though the heart was definitely losing its compensation.

The after history of the child with recurrent rheumatism deserves special attention for the whole prognosis depends on this.

Coombs in his Bristol record states that of every hundred patients with definite rheumatic heart disease, 31% recover; death before twenty occurs in 27%; another ten die before thirty years of age and another thirteen before forty. Only 19% in whom the disease is persistent survive forty years.

In the face of these figures it is impossible to accept applicants with rheumatic heart into the public service. Though teaching is quite a suitable occupation, their acceptance would throw an unfair burden on the superannuation scheme of the service.

During the school medical examinations few comparatively of the severe types are met with as they are so constantly away. In the annual returns of the Department ninety to one hundred and fifty or about 0·1% of the children in Sydney are away during the year because of acute rheumatism or chorea. Even at this low estimate for such a large city as Sydney one cannot help being impressed by the handicap imposed on the child. Unable to take up vigorous occupations, deprived of many months of school training, the heart child suffers both physically and mentally. Special provision should be made to permit of further investigation to render treatment more effective and to prevent recurrence. As a preliminary step a concerted attempt should be made from every metropolitan hospital to report such children to some central authority and the authorities of every large hospital might well group these children together and form a cardiac clinic for special study, classification and advice.

To follow this definite provision should be made for prolonged convalescence under inland country and open air conditions with specialized vocational training. Any collection of twenty to thirty children present in an institution may be provided with a teacher on application to the Education Department.

Prevention, however, is above all the main aim of investigation. At present the close scrutiny and effective treatment of tonsillar lesions appears the most rational plan, once the early manifestations are present.

THE SURGERY AND SURGICAL ANATOMY OF THE TONSIL OF THE FAUCES.

By RAYMOND HENNESSY, M.B., B.S., D.D.Sc. (Melbourne), F.R.C.S. (England and Edinburgh), L.D.S. (Victoria).
Melbourne.

WHEN the number and variety of methods taught and practised for the removal of the faucial tonsil from the human body are considered, a growing conviction is formed that all cannot be well. At the present time tonsillectomy is much more frequently advised than formerly when the operation was largely restricted to children. It would therefore seem necessary that some set and standard operation, equally suitable for child and adult, should be available.

GENERAL CONSIDERATIONS.

At the present two fundamental methods of tonsillectomy prevail. These are enucleation by an instrument called a guillotine, usually recommended for children and enucleation by dissection, usually reserved for adults. Both of these operations are practised in various modifications. The guillotine operation, almost moribund, has been resuscitated during recent years by Sluder in America and by Whillis in England. By their manœuvres complete removal of the gland is the aim, hitherto an impossibility with this instrument. Attempts, not wholly unsuccessful, have been made to render the operation bloodless by the addition of a crushing blade to the instrument, as in the guillotines of Redpath and La Force. This merely adds crudity to crudeness and is a retrogressive step. The operation of dissection has also been modified by different surgeons. The chief variations are in the method of removal of the lower pole. Many operators use and recommend a snare or a guillotine for this purpose. This is especially the case in Canada and America where the operation is commonly performed under local analgesia. So necessary is it considered that the lower pole should be dealt with in this manner that ingenuity has been expended in devising for the purpose special snares and special guillotines. Mr. Tilley has even devised a volsellum whose chief merit is that it is of such a shape as to pass readily through the loop of a snare or the ring of a guillotine. Mr. Waugh and others remove the lower pole merely by continuing the dissection on to the tongue and the pharynx. This is without doubt the more surgical procedure and in our opinion is the most satisfactory method.

The problem of enucleation of the tonsil has engaged the close attention of the present writer during the last five years. It is his considered opinion that Mr. Waugh's well known operation is the only one which is founded upon correct general surgical principles. The complete removal of the tonsil is invariable and certain. The hæmostasis is effected under vision and is assured. The operation is suitable, whatever the age of the patient. The arguments against the guillotine method are full of serious objections to its adoption as a standard operation. It is impossible completely to remove the tonsil in every case. Figures naturally will vary with skill and experience, but it may be observed that Sluder claims a complete tonsillectomy in only 92% of cases. It is probable that for adults alone even his success is lower than this. Moreover, hæmostasis is difficult and uncertain, unless one uses the clumsy crushing blade, a most unsurgical device. This makes and forms a pedicle and this pedicle must be composed of tonsillar tissue which is bad or of muscle (superior constrictor) tissue which is worse. Delayed and secondary hæmorrhages are liable to follow this method of operating. But there are even more serious objections than these. Many observers, the author among the number, maintain that it is very rarely possible to remove tonsillar tissue on the *plica triangularis* with the guillotine. In endeavouring to form an opinion about the possibility of complete tonsillectomy with this instrument, it must be borne in mind that the amount of tonsillar tissue on the *plica triangularis* is subject to a considerable amount of variation. The developmental conditions which determine this, are described in Keith's "Human Embryology and Morphology." The Spalteholz atlas exhibits two extreme cases; in the one complete guillotine enucleation is probable, in the other impossible.

A surgeon frequently has the experience of seeing or doing what appears to be a perfect enucleation with a guillotine. He examines the removed gland, demonstrates the capsule and peels back what is also usually called the capsule, but what is really the *plica semilunaris*, a fold of mucous membrane. Next day on examining the fauces he is amazed to see quite a large tuft of tonsillar tissue in the vicinity of the lower pole at the side of the tongue. This is the tonsillar tissue which remains on the *plica triangularis* and which is engorged, swollen and bruised by the operation. It has frequently been stated that this tissue disappears and cannot be seen some weeks later. While it is very true that it becomes less obvious when it is not swollen, it never entirely disappears. The statement is also frequently heard that it is only the lingual projection and that it is of no consequence, that it should be removed. This must be regarded as a cowardly concession to the conscience, for there is no evidence whatever that this portion of the faucial tonsil is likely to be healthy, while the remainder is diseased. On the contrary, a persistence of local and remote symptoms due entirely to this unremoved remainder has often been seen, for example, the sore throat attacks recur or the cervical glands do not decrease in size. It may be concluded, therefore, that except for the occasional throat surgeon, the guillotine operation may not and cannot survive as the classical method of tonsillectomy. It is too uncertain in its results. As generally practised, it too dangerously resembles a sleight of hand trick rather than a surgical procedure. Any method of snaring through the lower pole is also objectionable on the

ground that this is likely to leave too much tonsillar tissue in the throat.

The writer since 1921 has practised an operation which observes exactly the principles of Mr. Waugh's excellent operation, but which differs in some details of operative technique. These details are as follow:

(i.) The position adopted by the surgeon during the operation.
(ii.) The use of the Davis gag.
(iii.) The method of illumination of the field of operation.
(iv.) The method of removal of the lower pole of the gland.

Most of the deviations from Mr. Waugh's technique are rendered necessary or possible by the use of the Davis gag which was introduced by the writer into the Birmingham Throat Hospital, where the operation was evolved with the help of his friend and teacher Mr. B. Seymour Jones.

SURGICAL ANATOMY OF THE TONSIL.

Before describing the details of the operation it is necessary briefly to discuss the more important features of the surgical anatomy of the tonsil. Those who dissect tonsils require to have a very precise and clear conception about each of the following: (i.) The capsule of the tonsil; (ii.) the *plica semilunaris*; (iii.) the *plica triangularis*; (iv.) the upper and the lower pole.

The Capsule.

The tonsil occupies the concavity of the superior constrictor muscle of the pharynx, but only imperfectly fills it. Never at any point is actual contact made between muscle and gland, a loose mesh of areolar tissue always intervenes. This loose areolar tissue is of a dull pearl white colour, is devoid of large blood vessels and, notwithstanding that it is so firmly attached to the tonsil as to come away with the tonsil, it is actually a portion of the bucco-pharyngeal fascia which encloses the muscle. This tissue has been very generally referred to as the capsule of the tonsil, but it is by no means a capsule in the usual sense of the word. It does not completely enclose the tonsil, being strictly confined to this aspect of the gland. The remainder of the tonsil lies quite naked in the oral pharynx. Its importance consists of the fact that it constitutes the plane in which the dissector must work. Its function and *raison d'être* are precisely similar to those of the loose areolar tissue layer of the scalp, namely, to provide for free mobility. Its presence allows the soft palate and tonsil to move freely over each other during movements of speech, deglutition and mastication. It is therefore most plentiful in amount above the converging pillars of the fauces at the upper pole. It is so plentiful here that the interstices of its meshes aggregate into a large potential space capable of holding three cubic centimetres of fluid. This is the space occupied by the pus of a peritonsillar abscess. It may be called the supratonsillar recess and the opening up of this recess is a most important incident in the operation of dissection. It must be clearly understood that the surgeon cannot gain access to this recess until he deliberately cuts or tears through the *plica semilunaris* which separates, therefore, the supratonsillar recess from the supratonsillar fossa. Once the recess is freely opened, the upper pole can be delivered from the converging pillars and dislocated completely into the pharynx.

Towards its lower pole the tonsil closely approaches the muscle; in other words, this part of the tonsil is comparatively fixed and the areolar tissue is very small in amount. Everybody who has dissected tonsils, knows that at this site the muscle is very liable to be detached with the tonsil. It must, therefore, be reiterated that the tonsil is not completely enclosed by any capsule or sheath: this is one of the most important facts about its surgical anatomy.

The Plica Semilunaris.

The *plica semilunaris* is a thin fold of mucous membrane seen from the oral surface of the gland. There it is continuous with the stratified epithelium of the oral surface of the tonsil into which it insensibly merges. It is reflected from this on to the anterior and posterior pillars, where again it insensibly merges into the epithelium of the mouth and pharynx. At the angle of convergence of the pillars it is redundant and forms a *cul de sac* which is open below on to the oral surface of the tonsil. This *cul de sac* is called the supratonsillar fossa. There is another *cul de sac*, smaller in size and open above, formed in a similar manner where the *plica semilunaris* becomes reflected on to the free edge of the *plica triangularis*. This is known as the infratonsillar fossa. As is readily demonstrated on a recently removed specimen, the areolar tissue capsule is limited by the lines of reflection of the *plica semilunaris* and the *plica triangularis* from the oral surface of the tonsil on to the pillars.

The Plica Triangularis.

The *plica triangularis* is a thin triangular fold of mucous membrane attached to the tongue and the anterior pillar. The posterior margin is free and its postero-external surface forms the anterior wall of the infratonsillar fossa. As mentioned above the amount of lymphoid tissue found upon the antero-internal surface is liable to very great variation.

The Upper and Lower Pole.

The upper pole is definite and circumscribed. It is usually almost entirely concealed by the converging pillars. Owing to the redundancy of the *plica semilunaris* here and to the presence of such a large amount of areolar tissue the upper pole can be readily dislocated from the pillars by the means of a volsellum. The lower pole is vague and amorphous. It is quite unlike the upper pole and it is not at all easy to demonstrate where the lower pole of the tonsil actually ends. The lymphoid tissue splays out in a most irregular fashion along the anterior pillar on to the antero-internal surface of the *plica triangularis* to the

tongue and along the posterior pillar on to the pharyngeal wall and pharyngo-epiglottic fold. Sometimes apparent anatomical continuity exists between the lymphoid tissue of the tongue and of the fauces, but there is always a plane of cleavage demonstrable by dissection. It is most important to realize that the lymphoid tissue comprising the lower pole is erratic as to its limits, distribution and amount. These are the facts which make the completion of the removal of the tonsil by dissection so difficult and this is why so many operators resort to the snare or the guillotine at this stage.

The upper and lower poles may be compared to the external and internal abdominal rings. The former everybody knows, has seen and can demonstrate; the latter is vague and difficult of demonstration, indicating more the name of a locality than of a structure.

The Author's Operation.

The method of operating practised by the author is best discussed under the following headings.

Position of the Patient.

The patient reclines in dorsal decubitus with the head in the most acute dorsi-extension—the occiput rests upon the table. This is obtained by placing a sandbag under the scapulæ, not under the neck. This position brings the lower pole of the tonsil uppermost. All blood falls away from the larynx and pools in the postnasal space.

Position of the Surgeon.

The surgeon is seated upon a stool at the patient's head. He is thus equidistant from either tonsil and looks directly into the patient's pharynx. He maintains this position without change until the operation is completed.

Source of Illumination.

Direct illumination is obtained from a head lamp and not by reflected light.

Artificial light is always necessary in the writer's opinion. Quite recently the author has been using a Wolf lamp which he procured in Berlin. This lamp has solved for all time the problem of illumination for the surgeon. It gives a very white light and the illuminated field is not broken up by the reflexes of the filaments of the lamp. This is the case in all others which consist merely of a convex lens in front of a lamp. In other words this small head lamp gives the same kind of illuminated field as is obtained from a Nernst lamp. The lamps which are gas filled, run from four to eight volts and, being of very high amperage, require to be worked from an accumulator.

Mouth Gag.

The author invariably uses the Davis gag. He procured it in London during November, 1921, within a few weeks of its introduction there by Mr. Boyle, anæsthetist at Saint Bartholomew's Hospital. This instrument makes tonsil dissection easy and has solved nearly all the difficulties in connexion with the operation. It controls the tongue from obtruding in the field of the operation, it holds up the lower jaw and it delivers the anæsthetic into the pharynx. It is entirely independent of the teeth in the lower jaw and practically so of the upper teeth. It gives an unrivalled exposure of the parts.

Anæsthesia.

Continuous anæsthesia is essential. This may be obtained by Shipway's apparatus. The writer uses a modification of this shown him by Mr. Meynell, anæsthetist at Saint Thomas's Hospital London. An oxygen cylinder or an ordinary air blower carries over the ether. The ether tube fits on the spatula of the gag and the vapour is delivered almost directly over the glottis. The intratracheal method of producing anæsthesia is never necessary.

Stages of the Operation.

The operation may be divided into three stages.

Delivery of the Upper Pole.

The volsellum is applied and the tonsil is drawn into the pharynx. With any appropriate instrument, the author uses a tonsil knife of his own design, the *plica semilunaris* is torn through along the anterior pillar till the pearl white areolar tissue appears. Then by dissection with the knife the supratonsillar recess is completely opened by severing all this areolar tissue around the upper pole, strong traction being used on this with the volsellum. When the areolar tissue has been completely torn through, all that prevents the complete dislocation of the pole from the fossa, is the redundant fold of the *plica semilunaris* at the angle of convergence of the pillars and the same tissue as it is attached to the posterior pillar. The plica often offers resistance and it requires a little care not to lacerate the faucial dome or strip the posterior pillar. The delivery of the upper pole is now complete and the tonsil can be made to stand on its head like a thyreoid gland when the vessels of the upper pole are divided.

Removal of the Body and Lower Pole.

A second volsellum is applied or the first removed and reapplied. A little gauze wiping nearly always pushes the constrictor muscle away from the tonsil till the *plica triangularis* is approached. Here the dissection is completed by a most ingenious instrument devised by Mr. Seymour Jones, of Birmingham Throat Hospital. It acts on the principle of tissue stripping with a surgical scissors such as Mayo's. Indeed a suitable scissors or Mr. Waugh's forceps may be used, but Mr. Jones's instrument is more convenient and gives a cleaner, quicker and more bloodless dissection. This stripping is continued till the natural line of cleavage is reached anteriorly on the tongue and posteriorly on the pharyngeal wall.

Hæmostasis.

The principles of hæmostasis so well known in general surgery are applied in this operation.

Immediately after removal of the tonsil the fossa is packed with gauze for about one minute. The gauze is then removed and if oozing continues, it is probable that it is not merely capillary, but that there is a bleeding point. It is found as a matter of experience that it is quite the exception to have to deal with a bleeding point. If the operator keeps strictly to the areolar tissue plane, uses suitable instruments, operates deliberately and leisurely with good illumination and all the time under vision, there will be no hæmorrhage more serious than venous and capillary oozing. If the dissection is carried into the constrictor muscle and it is ploughed up or if the dissection goes outside it, of course troublesome bleeding may occur.

Occasionally the hæmorrhage is very free just before the completion of the operation. The writer has found in these cases that it is best rapidly to complete the dissection and not to desist and endeavour to stop the bleeding. This is probably coming from an incompletely divided vein which is stretched by the traction made on the fauces by the tonsil in the volsellum. When the tonsil is removed the fauces relax, the veins retract and the bleeding instantaneously ceases. Persistent bleeding will come from one of three situations. The first and most common is from the supratonsillar recess. This is due to a small vein which runs under the posterior pillar to the dome of the recess. The most effective manner to deal with this is to pass a single catgut stitch through the soft palate at the base of the uvula just distal to the angle of convergence of the pillars of the fauces. It is extremely difficult to pick up and tie this bleeding point and the writer has never known the above procedure to fail. Far from being detrimental, it seems to expedite subsequent healing and to lessen the scarring. It may be mentioned that Mr. Waugh passes two of these sutures on both sides as a routine measure in all his operations. He does not do this to obtain hæmostasis, but to promote healing and lessen scarring. The second site of bleeding is from the constrictor muscle. There the operator can always see and pick up the point. It is waste of time endeavouring to tie off the vessel directly and all sorts of absurd fancy knots have been devised. The ligature always falls off, because it is impossible to get a sufficient amount of tissue in the hæmostat to hold the ligature. Therefore with a small fully curved bowel needle a generous bite of muscle is taken and the catgut is anchored and then is tied in the usual fashion around the hæmostat. The third and most rare site of bleeding is from the *plica triangularis*. It is the only arterial bleeding which should occur normally in tonsillectomy. It is due to a small branch of the *dorsalis linguæ* artery and is controlled by forci-pressure perhaps reinforced with ligature. It is scarcely necessary to add that the surgeon should no more think of sending the patient back to bed till all hæmorrhage has ceased than he would after partial thyreoidectomy.

The actual removal of the tonsil never consumes five minutes. Any delay on the table is always due to obtaining hæmostasis. The size of the tonsil has practically no effect upon the ease or difficulty of the operation. The consistence and shape are of more importance in this respect. A soft tonsil, splaying all over the fauces and pharynx, gives anxiety. In these cases it is unwise to rely upon one volsellum and the author often removes the tonsil from the fauces with three volsella attached to it. When the areolar tissue capsule has been destroyed by peritonsillar inflammation and the supratonsillar recess obliterated, the natural lines of cleavage between muscle and gland are lost and the surgeon is obliged to keep dissecting through a plane of tough, fibrous, scar tissue.

Once the upper pole is removed, however, the operation proceeds as in a normal case.

In conclusion it may be added that this operation is applicable at any age. At the Children's Hospital, Great Ormond Street, London, all tonsils are dissected and all operations done in the Out-patient Department. A guillotine is not used at this hospital any longer.

GALL BLADDER AND ALLIED INFECTIONS.

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THE longer one is in practice, the more one realizes what a large proportion of patients consult one for some or other variety of dyspepsia.

Until recent years these dyspeptic symptoms were ascribed to gastric lesions and for their relief drugs have been liberally administered by the physicians, whilst the surgeons tried their hand at gastro-enterostomy and other measures; they perhaps did an exploratory laparotomy in some cases with the expectation of finding gall stones, but, feeling none, closed the abdomen, quite satisfied that at any rate the gall bladder was not to blame.

But such surgeons as Moynihan, the Mayos and others by the thoroughness of their clinical examination and by the coordination of patient's symptoms with operative findings have revealed to our knowledge the pathology of the living instead of the pathology of the *post mortem* room upon which most of us have been brought up.

Added to this the revelations of X rays after the administration of an opaque meal and to a very much less extent the results of fractional test meals have almost revolutionized abdominal work; it is now approaching in the best clinics some degree of scientific accuracy. But although this may obtain in the best teaching hospitals, I am rather doubtful if the knowledge possessed by these leaders of abdominal surgery has filtered out to the average surgeon, physician or general practitioner. For the lack of this knowledge large numbers of patients today are being denied that relief that they should be obtaining; consulting rooms, hospital wards and out-patient rooms contain many who are being treated for "nervous breakdown," chronic dyspepsia,

neurasthenia, neuritis, "change of life" and other similar complaints. In many of these cases closer analysis reveals some pathological condition such as a chronically inflamed appendix or gall bladder which so upsets the digestion that the perfect working of the bodily machine is interfered with and chronic ill-health results. The protean nature of the symptoms and the distance (in some cases even extending to neck and head) of the site of the pain may very easily cloud the issue and put one off the correct track. I recall two cases within the last few weeks in which, associated with chronic cholecystitis, was pain in the centre of the forehead (an area supplied by the ophthalmic branch of the trigeminal, which has a communication with the sympathetic through the cavernous plexus); in other cases pain just below and behind the ear is a feature.

The frontal pain had taken one patient in the first place to a nose and throat surgeon, but as she was not conscious of anything wrong intranasally, she was able to resist his blandishments and the unalluring prospect of a nasal operation.

One of these gall-bladder patients with the frontal pain had also some difficulty in urination; in fact was sent down from the country to Sydney Hospital for the removal of an enlarged prostate and was admitted to the urinary ward. He was perfectly free from any sign of obstruction (either from enlarged prostate or calculus), of infection or of organic nervous disease. Inquiring further into the history, we found that he had abdominal pain (referred by him to the umbilicus) for some years, usually worse after meals. Laparotomy revealed most definite chronic cholecystitis with many adhesions and a chronic appendicitis. Removal of these has cured all his symptoms (including frontal pain and urinary disability).

Presumably the course of the stimulus in this case was through the hypogastric nerves (from the thoraco-lumbar autonomic system); the function of these nerves is to maintain the contraction of the bladder sphincter.

It must not be forgotten, however, that occasionally pyelitis and cholecystitis coexist.

The difficulties surrounding the interpretation of the origin of pain are vividly recalled by a recent case. The patient, very ill and with a hectic temperature, referred his pain to the upper cervical spine at the base of the skull. Autopsy revealed septic endocarditis of the aortic valves, the vegetations being very large.

It is probable in this case the stimulus proceeded from the cardiac plexus up to the superior cervical sympathetic ganglion which has a connexion with the upper cervical nerves.

Before leaving this aspect, might I say what a fruitful field there is in front of the observer in working out the interpretation of many of the vague aches and pains which at present we disregard, but which, when properly understood, will probably reveal themselves as reflex in nature, originating in the sympathetic, thence to the cord and out through the spinal nerves. Any hospital will furnish a student of research with abundant material. Our profession would then more nearly approach being a scientific profession.

Some may be inclined to belittle the patient's complaints, especially when they have been unkind enough to fail to respond to a favourite prescription. How natural that it should be nothing worth bothering about when the doctor cannot find the exact or the correct cause. Yet it is not this way that advance in our work will come, but only by a recognition of the fact that in most cases the solution of the puzzle is to be found and that the first essential is the taking of a careful history. Out of previous experience in the consulting room, ward and operation theatre a judgement can be built that will help to solve many an abstruse puzzle. Add to this the special aids we now possess (X rays *et cetera*) and human ailments will gradually become more intelligible and the diagnosis of "neurosis" less frequent. Mackenzie's book on "Symptoms and their Interpretation" will still repay perusal by young and old in the profession; it serves to show how the stimulus of an inflamed gall bladder is conveyed along the sympathetic nerves to the spinal cord where the stimulus overflows to the adjoining portion and travels along intercostal nerves, there to be felt as pain in the shoulder blade, back *et cetera*. Of course in addition impulses are conveyed *viâ* the phrenic and so out through the cervical nerves of adjoining origin, thus explaining cervical, clavicular and acromial pain.

Curiously enough the pain may be referred to the other side of the body; the pain from an appendix —even tenderness on palpation—is often felt not only on the right but the left side, due to a pure reflex and not to any underlying inflammation of the parietal peritoneum. Apart from a reflex action along cerebro-spinal nerves the sympathetic fibres accompanying the pyloric artery are often stimulated and pylorospasm is produced. The increased tension of the muscle in a state of spasm is one of the causes of the pain complained of; it presumably is the cause of retention and eructation of gas that is such a characteristic symptom in many (but not all) cases of gall bladder inflammation. This pylorospasm is nearly always noted by the radiographer; it exists also in cases of appendicitis and colitis; if they can be excluded, it ranks high as a diagnostic sign. The vagus which also supplies the stomach, is apparently not usually affected reflexly in gall bladder conditions. The sphincter of Odi guards the entrance of the bile duct into the duodenum; is it possible that spasm of this through its sympathetic supply causes retardation of flow of the bile and temporary distension of the gall bladder?

Although most physicians would be reluctant to confess it, there is much truth in what Moynihan says that an abdominal surgeon is a good physician condemned to practise surgery. There is no question that the views and writings of many physicians require considerable modernizing. Surgeons have an opportunity of making themselves acquainted with early pathological lesions in a way that no one else has. Of course I am bound to admit that this is not always made use of. A patient I recently operated upon, manifested some features that explained to some extent some clinical obscurities; adhesions from the neck of the gall bladder and

cystic duct to the duodenum caused distinct kinking of the duct with distension of the gall bladder; this organ was quite tense until the adhesions were separated and the duct straightened out, when it emptied steadily. This patient had had pain for five months with frequent exacerbations resembling gall stone colic; there were no gall stones present.

In days gone by if the gall bladder on palpation revealed no gall stones it was left alone and the abdomen was closed. Nowadays we are wiser and realize that gall stones are in many cases but the terminal stage and are usually preceded by some years of infection and inflammatory trouble. This is recognizable to the surgeon by slight or definite changes in the colour of the gall bladder and very often of the liver. In one recent case in which there was subacute inflammation of the gall bladder, the liver was pale and there were numerous petechiæ beneath its capsule on its under surface. This helps to support the view that in many cases hepatitis is a precedent condition to the cholecystitis; infection in these cases is presumably downward from the liver by the bile ducts (hepatic and cystic) to the gall bladder. Pale areas, spreading from the gall bladder on to the adjoining liver substance, indicate a chronic infection spreading on to the liver by way of the lymphatics. But adhesions most of all are our great guide; where they are, there inflammation is. One must be careful, of course, not to confuse them with congenital anatomical bands. If Lane and others are correct, bands are formed in the line of strain in cases of visceroptosis. I have known cholecystectomy in these cases to give considerable relief; the bands pull upon the cystic duct and neck of gall bladder, cause distension of the organ and resultant symptoms of pain and reflex dyspepsia.

Although adhesions may originate in another organ, such as the duodenum from an underlying ulcer, still in nine cases out of ten the gall bladder is the offender.

It is generally agreed that the contraction of unstriated muscle is the most frequent cause of abdominal pain. We know from radiological examination that the pylorus is often in a state of spasm after the taking of an opaque meal in gall bladder conditions. Pylorospasm is then the possible cause of pain. Moreover, excessive contraction of the unstriated muscle of the gall bladder, cystic and bile ducts is another possible cause. This would be due either to undue distension of the gall bladder: (i.) from kinking of its outlet; (ii.) from the obstruction of a stone; (iii.) from increased content as the result of inflammation of the mucosa with formation of mucus (the mucosa of the cystic duct shares in the inflammation, hence the outlet is to some extent interfered with); (iv.) possibly from increased content as the result of spasm of sphincter of Odi.

Dealing first with spasm of the pylorus; what could cause this? The explanation that occurs to one is that, being innervated by the sympathetic branches which accompany the pyloric (branch of the hepatic) artery, it is reflex from the irritation of the sympathetic twigs which supply the gall bladder along the twigs of the cystic artery.

Any departure from the normal in a test meal finding would be due largely to an interference with regurgitation of the alkaline duodenal contents back into the stomach as a result of pylorospasm rather than to any inherent defect in the secretory mechanism of the gastric juice (Bolton). As a consequence heartburn is not an uncommon complaint.

Turning to those patients that owe their pain to the undue contractions of the gall bladder musculature, inflammation is the *fons et origo* of the disturbance, the exception being a kink of the cystic duct by a band. This may be congenital, but in many cases is formed as a result of undue strain in a patient, the subject of visceroptosis. Another exception would be the possible cases in which spasm of the sphincter of Odi is a cause. These possibly exist (Mayo). At any rate, pain clinically due to the gall bladder is sometimes relieved by treatment such as belladonna, bromides, holidays and change of scene. The sphincter is innervated by the sympathetic which is subject to psychical influences, such as overwork, worry *et cetera*.

Fraser, of Edinburgh, remarks upon the frequent confusion of spasm of the caecum and colon with appendicitis; they both cause pain in the ileo-caecal region. It may be due to direct stimulation of the sympathetic, or indirect as a result of stimulation of the adrenals (with which the sympathetic is in intimate association); adrenalin is similar in its effects to sympathetic excitation.

May there not be similar confusion in the case of the gall bladder?

The Inflammatory Causes of Gall Bladder Infection.

Now as to the inflammatory causes which are the usual causes of the pain.

First let us consider the origin of the inflammation. There are various possibilities: (i.) Direct ascending infection from the duodenum; (ii.) descending infection from the liver, along the bile ducts; (iii.) infection through the lymphatics from neighbouring organs; (iv.) infection from the blood stream.

Ascending from the Duodenum.

There has been a tendency of recent years to look upon infections travelling contrary to the direction of the excretion of the organ as rare, except in the presence of obstruction. And yet the factors favouring ascending infection up the bile ducts to the gall bladder are probably often present in the duodenum.

Hurst states that in 40% of the cases of appendicitis there is achlorhydria; we know this condition predisposes to intestinal sepsis; we also know that cholecystitis and appendicitis frequently coexist. Thus we can more readily understand the infection to exist in the bowel and ascend the bile duct rather than that the gall bladder is infected by means of the blood stream from the appendix direct.

Possible Cause of the Frequency of Bowel Infection.

The experiments of Professor Plimmer,[1] McCarrison and others shatter the comfortable belief that, so long as such diseases as scurvy, rickets *et cetera* do not occur, people are receiving an adequate vitamin supply. They found that partial vitamin deficiency did not produce any fulminating effects, but that it did produce a series of effects which are amongst the commonest complaints of civilized man. The chief effect of partial deficiency of Vitamin B was intestinal atony which produced stasis and intestinal toxæmia. White bread is devoid of any vitamins whatever. Wholemeal bread is rich in Vitamin B particularly.

Is this alleged vitamin deficiency the cause of the frequency of the (also alleged) deficiency of hydrochloric acid and resultant alimentary sepsis.

Skilled observers who have been in practice for the last thirty or forty years, are quite confident that appendicitis and cholecystitis are of increasing frequency quite apart from the greater accuracy of modern diagnosis. Is the cause to be found in our diet? Much of our food is now prepared for us in the factory to the great convenience of the housewife, but perhaps to the detriment of our digestive and accessory organs. I fancy the city provides more sufferers than the country.

If these observations are correct, it would be but another instance of the recognition and description in textbooks of the signs and symptoms of definite disease, but the overlooking of earlier and less pronounced manifestations of the same diseases. Surgeons who have had to examine students, will recall how often, for example, the signs and symptoms of peritonitis are given when the examiner has asked for the early signs of a perforation of a gastric ulcer.

Descending Infection.

There is no doubt that descending infection is quite a common mode. The liver in its function as filter between the alimentary tract and the rest of the body, performs numerous valuable functions, not the least of which is the interception of bacteria; some of these are excreted into the biliary canaliculi and so on into the gall bladder where, favoured by conditions of stasis, they cause trouble. If the cholecystitis lasts for any time, cholesterin and calcium may be precipitated which together form a gall stone. But this tendency to deposit cholesterin is greater in some patients than others, particularly in those who are fat—females of the age of forty and onwards (a time when they are developing what is colloquially called the "middle age spread"); they have usually had children.

Examination of the blood generally reveals an increased cholesterol content; add to this infection and you have the two most important factors in gall stone formation. Personally, I have not had the blood of any of my patients examined, being assured that it was an expensive and tedious process; recently a simple and inexpensive method has been introduced.

Lymphatic Spread from the Alimentary Canal and Infection from the Blood Stream.

Moynihan and others believe both lymphatic spread from the alimentary canal and infection from the blood stream are not infrequent causes of infection.

Associated Changes in the Liver.

Graham[2] claims that in every one of his operated patients with demonstrable pathological changes in the external biliary system, he found macroscopical and microscopical evidence of liver change.

Personally I cannot speak concerning microscopical changes; macroscopical changes are quite frequent (such as variations in colour, changes in capsule, adhesions, crenation of edge), but in many cases seem to be mostly in the vicinity of the gall-bladder, so that it is quite possible they are due to extension from that organ and not primarily in the liver. Clinically it is quite likely that some of the vague constitutional symptoms that this class of patient suffers from, are due to a derangement of hepatic function. It may be well to enumerate these functions. Quoting from Graham again, they are: (i.) Storage of glycogen; (ii.) metabolism of protein and to a less extent of fats; (iii.) pronounced influence on the coagulation of blood and on the development of fibrinogen; (iv.) bile formation and secretion; (v.) a detoxifying function; (vi.) it has the most definite regenerative capacity of any organ in the body; thus with cirrhosis there is cell regeneration, hence a frequent lack of symptoms.

If hepatitis precedes or accompanies cholecystitis, it would be unreasonable to expect that all the symptoms would disappear with the removal of the gall gladder. There is also frequent coincident affection of the pancreas. If one follows the teaching of Judd and Burden[3] who believe that the most potent cause of persistence of symptoms after cholecystectomy is delay of the patient in coming to operation, then infection of the liver and pancreas are secondary to the gall bladder; by this time they have suffered irreparable damage. An attack of pancreatitis, quite resembling biliary colic, may recur after operation; it is cured in most cases by draining the common duct for three to four weeks.

To biochemistry, then, more than ever, will we look in the future for an indication of the state of hepatic function. Tests of hepatic efficiency will probably pass through some of the trials and tribulations of renal efficiency tests before they can be relied upon thoroughly by the clinician. They will no doubt warn us of favourable and unfavourable operative risks.

Graham has found changes in the blood coincident with disease of the gall bladder and liver; uric acid, cholesterin and glucose were in many cases above the normal limit.

Heyd[4] has had complications after operation, one group of patients not recovering consciousness, another becoming worse in thirty-six or forty-eight hours and the third group not until the fifth or sixth day. Their hepatic function has apparently sufficed for ordinary needs, but a surgical operation

has thrown upon an already compromised liver an increased burden; it is unable to stand it; the liver capacity is exhausted.

Function of the Gall Bladder.

The liver secretes about 30 cubic centimetres (one ounce) of bile per hour when functioning; between digestive periods the gall bladder is concentrating bile; at the same time it adds mucus to it; the fluids of bile concentration are absorbed by the lymphatics. The sphincter of Odi, encircling the common bile duct outlet, maintains the tension of the duct and is probably concerned in mechanically enabling a part of the total bile to pass into the gall bladder for concentration, it therefore assists in cholesterol accumulation.

Symptoms.

As I have remarked, the symptoms of gall bladder disease are very variable; they are in many cases more prominent than the signs. It is not at all uncommon for no tenderness to be revealed on palpation of a gall bladder that has been the seat twenty-four hours before of a temporarily impacted calculus in its neck or of distension due to some inflammatory cause. This fact is known to many surgeons, but not generally appreciated by physicians.

The classical gall bladder pain complained of by many patients is in the epigastrium, extending round the back to the infrascapular region; usually half an hour or so after a meal and accompanied with eructations of wind.

In some cases one gets a history of heartburn several hours after meals, followed by acid eructations and vomiting with more or less complete relief. In most cases on deep pressure over the right hypochondriac region some tenderness is elicited; in many cases this is slight and in some absent.

Hæmatemesis is an occasional complication; presumably due in most cases to a small acute ulcer, as the X rays usually fail to locate any sign of chronic ulceration. I suppose it is embolic in nature.

Diagnosis.

As aids to diagnosis X rays are of some value, if only by excluding other lesions. From conversation with radiographers I gather that the discrimination between gall bladder disease and duodenal ulcer is one of their most difficult problems. As to direct evidence of gall stones in a radiograph I am not enthusiastic; in any case there are many cases of gall bladder disease in which gall stones are not present.

Cholecystography.

Cholecystography, introduced by Graham, makes use of the fact that salts, such as sodium tetraiodophenolphthalein and sodium tetrabromophenolphthalein are filtered from the blood stream by the liver cells, thence some gets into the gall bladder and there gives an opaque shadow to the X rays.

Any departure from or absence of the normal shadow indicates a pathological lesion.

The drug is given by the mouth in divided doses about twelve hours before the radiograph is taken; in this way it is said to be safe. My experience of this method is only limited, so I cannot speak definitely, but it promises well.

Opaque Meals.

Syme Johnson[5] summarizes the indirect evidence of gall bladder disease as revealed in an opaque meal: (i.) Conditions affecting the stomach. It is often found to be lying obliquely. There is frequently a cylindrical narrowing of the distal end of the stomach, closely resembling the shape and dimensions of a German sausage. (ii.) Conditions affecting the duodenum. Sometimes there is a semilunar impression upon it, sometimes fixation and distortion. (iii.) Conditions affecting the colon. Portions of the colon in the vicinity of the hepatic flexure may be pulled up and fixed by adhesions.

Test Meals.

Bolton has shown that the highly acid gastric contents which in former times were always supposed to denote a dyspepsia dependent upon hypersecretion, are in many cases really due to defective pyloric function which does not permit adequate regurgitation of the alkaline duodenal fluid to neutralize the gastric contents. Conversely he has shown that low gastric acidities are often due to an abnormally free regurgitation.

Treatment.

If we subscribe to the theory that spasm or at any rate achalasia of the sphincter of Odi is the cause of gall bladder distension and resultant pain in some cases, then we will agree that treatment directed to the palliation of psychical influences, such as anxiety, overwork *et cetera* will be sufficient to effect a cure. Such measures would include a holiday, exercise in the open air (of which surf-bathing is the best), also such drugs as belladonna and the bromides which dull the excitability of the nerves. And in practice one undoubtedly gets relief and apparent cure with such measures in some cases. But if the condition is genuinely one of cholecystitis or of gall stones, then I do not see how one can expect more than temporary relief from such a line of treatment. There are periods of remission of symptoms in most diseases, but my experience has been that the symptoms of inflammation of the gall bladder recur in most cases, unless surgically treated. The cystic duct is like the appendix in that it has a very narrow lumen and very little swelling of the mucosa is sufficient to cause obstruction to the outflow of contents. As the gall bladder participates in the inflammation, we thus have the condition of the proper drainage of an inflamed organ being interfered with and this is against all surgical principles. Hexamin has been recommended in the hope that it might exercise its antiseptic action on the bile, but though useful for any associated pyelitis, I have not found it of any value for cholecystitis.

But operation is not to be undertaken lightly without due regard for the risks, for risks there undoubtedly are. Probably in no part of the abdomen are the technical difficulties so great as in a bad gall bladder or common duct operation. If to

our knowledge gained in the ordinary textbooks of anatomy we add that given to us by special observers, such as E. R. Flint,[6] then we will be more careful than ever. He warns us that the right hepatic artery occasionally crosses in front of the common hepatic duct near the junction of the cystic duct; that there is not infrequently an accessory cystic artery. Turning to the bile ducts, he points out that the cystic and common hepatic ducts are bound together for a short distance with fibrous tissue before they unite about one centimetre above the upper border of the duodenum. Also, that it is not at all uncommon to have an accessory right hepatic duct, joining up with the main hepatic duct, very often near the junction of the cystic duct. This explains the occasional collection of bile at the site of a cholecystectomy operation. For this reason he favours the insertion of a tube, if only for a few days. In my experience I find that the proportion of very difficult cases is not so great as formerly, because earlier recognition of cholecystitis and the value of surgical treatment is putting these patients in the hands of the surgeon often before gall stones have formed or at any rate before they have passed into the common bile duct.

In patients that have pyrexia as well as jaundice, I defer operation until the temperature is normal. For the jaundice I employ in bad cases the intravenous injection of calcium chloride.

Operative Technique.

As to position, I think there is nothing better or simpler than a pillow under the shoulder; this raises the chest and depresses the liver with the gall bladder. It brings it well into the operative field, provided there are no adhesions between the capsule of the liver and the parietal peritoneum. MacCormick uses nothing else.

The incision I use is the oblique one through the right rectus sheath and muscle substance. The stomach and duodenum are first examined for any abnormal condition. The most common abnormality is alteration in the colour of the gall bladder (paler than usual), omental adhesions, adhesions between the fundus and the colon, frequently between the neck and the duodenum; these may be taken as certain confirmation of the diagnosis. Some of these may have to be ligatured and divided; those over the neck and the cystic duct may generally be wiped off with gauze on a holder.

Having fixed the neck of the gall bladder with a clamp, the peritoneal reflection of the gastro-hepatic omentum will need to be nicked. This exposes the cystic duct and (between it and the liver) the cystic artery. It is well to remember the parallel course the cystic and common hepatic ducts take, otherwise the latter may very easily be included in the ligature. I prefer to start at the cystic duct and work towards the fundus like most operators; the fundus makes a very useful tractor to expose the deeper structures; this combined with the pillow under the shoulders gives excellent exposure. There is a limit, however, to the amount of traction the gall bladder and ducts will stand. I have seen a case of chronic cholecystitis in which the cystic duct and artery snapped across. A stone impacted well down in the cystic duct may be temporarily confused with an enlarged lymphatic gland and *vice versa*.

Where the cystic duct has been divided in the course of a cholecystectomy it often is a wise procedure to follow MacCormick and pass Hegar's dilators down the common bile duct; this will push any small stone into the duodenum and at the same time dilate the duct (at least temporarily) to make it easier for the passage of others. But to do this one must divide the cystic duct near its termination, otherwise the folds make it difficult. A small sized Lister's sound is useful to start with; it has a suitable curve.

If a stone has to be removed from the common duct, the opening is stitched up again and a drain put down to the outside; it is not usual now to drain the duct itself.

Stones have occasionally to be extracted from the hepatic duct with forceps or squeezed down from the outside.

Cholecystectomy and Cholecystostomy.

Personally, I perform cholecystectomy in nearly every case rather than cholecystostomy the exception being when a patient is too ill to stand the longer operation. But it is often politic to leave the neck of the gall bladder behind, when the difficulties of the operation are such that damage might be inflicted on the bile ducts. A long clinical experience has convinced me that recurrence of trouble is less common with removal than with mere drainage; but when there is any doubt about the hepatic and common ducts being free of obstruction, then drainage is the better operation; the gall bladder will be a very useful landmark in any future operation.

Mayo considers that relaxation of Odi's sphincter is more complete with excision than by merely draining.

I find it frequently necessary to combine appendicectomy with cholecystectomy. It is better to attend to the gall bladder first; any oozing that may take place from the surface of the liver *et cetera*, will have been controlled probably by a strip of dry gauze by the time the appendix has been removed.

Moynihan advises insertion of a drain. MacCormick seldom does. If a drainage tube or cigarette drain is left in, then I always bring it out through a wound lateral to the incision. If the oozing is such as to require gauze, then I employ a split tube with iodoform gauze laid along it; the gauze being removed gradually from the sixth day on. The tube must be left longer, for the gauze has caused a certain amount of sepsis which must be drained; it must be shortened gradually, not removed at once. I have seen neglect of this detail cause a subphrenic abscess. I have also seen a persistent sinus follow the use of silk for tying the cystic duct; I always employ catgut now.

At this point I would like to refer to the importance in operation notes of referring to the appearance in colour, shape *et cetera* of the gall bladder,

liver, duodenum and so forth; also as to the presence or absence of adhesions. Too often in hospital notes much space is wasted over a description of the incision *et cetera* and little or no attention is given to the features that really matter.

After Treatment.

Surgeons are too prone to look upon the operation as the end of the treatment. As in duodenal ulcer we are finding that gastro-enterostomy needs to be followed by alkali treatment, so in appendix and gall bladder affections we find in a certain proportion of cases that certain symptoms persist; these are probably alimentary or hepatic in origin and will probably be relieved by mild purgation or by bismuth and alkalis. Perhaps in the light of Plimmer's investigations they may be relieved by a diet more generous in Vitamin B than modern civilized communities are accustomed to.

If there has been hæmatemesis prior to the operation, then a subsequent course of Sippey's diet is advisable.

Pain from adhesions occurs sometimes after the operation; I have known one patient declare that after a bout of seasickness this pain left her.

Summary.

1. Gall bladder disease is much more common than usually suspected. Its symptomatology is extremely varied and in many cases not conspicuously directed to the gall bladder.

2. Signs are in many cases inconspicuous.

3. Modern surgery in the hands of keen observers has been the means of recognizing the frequency of the affection.

4. In most cases operation in the shape of cholecystectomy (frequently combined with appendicectomy) gives complete and permanent relief; in some cases although the severe symptoms disappear, minor digestive disturbance may persist.

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Reports of Cases.

A CASE OF MALARIA ACQUIRED IN SYDNEY.

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A MALE patient, aged twenty-four years, was admitted on May 13, 1926, with this interesting history:

On the afternoon of March 6, 1926, he did not feel well and went to bed. He was better next morning and worked, but did not feel well in the afternoon. On March 8 he became ill again in the afternoon, with an attack of severe vomiting, cold shivers, sweating and a temperature of 40° C.

He was treated by his local doctor for food poisoning; he felt a lot better that night, but the next afternoon a similar "attack" occurred and again the following afternoon when he was sent to the Balmain Hospital. He was an in-patient there for about ten days, but no definite diagnosis was arrived at and he was discharged, the "attacks" having ceased after four days. Early in April the "attacks" came on again in an irregular fashion and he was seen by another doctor who told him his tonsils were at fault and advised their removal which was done in a private hospital. After the operation the "attacks" still persisted, although the vomiting was only occasional; for three weeks prior to admission he had had an "attack" every afternoon about 2 p.m.

On this history a provisional diagnosis of malaria was made. The patient was admitted about 11.30 a.m. with a normal chart, but shortly after 2 p.m. the "attack" came on and he had a typical rigor, after which his temperature rose to 38·5° C. Nothing of importance was found on physical examination. A film was made from his peripheral blood and revealed numerous *Plasmodium vivax* in two stages:

(i.) Young ring shaped trophozoites lying in unaltered red cells and (ii.) well developed trophozoites in enlarged red cells with Schüffner's dots.

Double infections of a cell were occasional, whilst a prolonged search revealed only one male and one female gametocyte.

Quinine bihydrochloride 0·6 gramme was given intravenously and repeated the next day; then the patient was given 0·6 gramme of quinine hydrochloride by the mouth three times a day. No further rigors occurred after the first day and the patient was discharged on May 24, 1926.

The patient had lived in Scotland until fifteen months ago. He came direct to Australia through the Suez Canal, spending one day at Port Said and Colombo. Since December 24, 1925, he had not been out of the Sydney district, but prior to that time had visited country centres to the south and west of Sydney. There was no history of any illness before the present one, except a "bilious attack" on the ship between Adelaide and Melbourne.

Dr. Ian Mackerras, a Linnean Macleay Fellow at the Department of Zoology, was very interested in this case and from a report of his investigations I quote freely:

> Since Christmas he had visited Maroubra, Bondi, Coogee and La Perouse by day, but had not slept away from his home at Gladesville. He spent a day at Narrabeen on the 1st January, 1926, and lived there from 5th to 15th February, coming into town to his work by day and sleeping at Narrabeen by night. Week-ends were spent entirely at Narrabeen. Whilst there the patient stated the mosquitoes were very bad. The presence of a double infection excludes any place where he did not spend two successive nights or days, so that the only possibilities are Narrabeen and Gladesville. The former seems the most likely locality as his stay fits in with the incubation period and Anophelines are not uncommon there. It is unlikely that Anophelines are common at Gladesville. *Anopheles annulipes* Walk. is present throughout the

summer months at Narrabeen and is at times abundant. It bites at dusk and afterwards; it has been known to visit houses in the Sydney district and would be the presumptive carrier in this case.

Anopheles atratipes Skuse has been found at Collaroy, but it is never common and is an early summer species.

Anopheles stigmaticus Skuse has not been found at Narrabeen, but may occur there.

The vector must have been sufficiently abundant for two separate mosquitoes to have survived to bite the patient. An individual mosquito will not bite again for two or three days if it gets a good feed; thus the rare species are practically ruled out in the present infection. A visit will be made to the house at Narrabeen and to the patient's home at Gladesville to determine the occurrence of Anopheline breeding grounds in the neighbourhoods.

My acknowledgements are due to Dr. Wilfred Fairfax, Honorary Physician, Royal Prince Alfred Hospital, for his kind permission to publish these notes.

TWO CASES OF ACUTE DIFFUSE OSTEOMYELITIS OF THE SUPERIOR MAXILLA.[1]

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CASE I.

THE patient, H.K., male, aged sixty years, reported on March 15, 1926, with an extensive dermatitis of the whole face, accompanied by considerable œdema and excoriation of the left naris and creamy discharge therefrom. Proof puncture revealed pus in the left antrum under pressure and a skiagram revealed opacity of the left antrum and ethmoid. The patient suffered considerable pain about the face more especially from the excoriations about the naris and he persistently refused any form of surgical aid, including lavage, until April 6, 1926, when extreme pain and a temperature of 40° C. (104° F.) and extensive cellulitis of the left side of the face made him consent to urgent operation.

A brawny swelling was freely incised through the left gingivo-labial fold and the periosteum stripped up until the abscess was found high up under the left malar bone. An extensive area of bone in the canine fossa was found necrosed and the gloved finger sank into the antrum through the softened bone over a large area. The cancellous spaces of the maxilla contained creamy pus. Drainage and lavage were instituted through the canine fossa, temperature and œdema subsiding in two weeks. Left frontal sinus pain persisted slightly and a skiagram then revealed a left pansinusitis. As the œdema of the palpebral cleft subsided, evidence of an old iritis was seen, but the fundi were normal.

Five weeks later he was admitted to the Royal Prince Alfred Hospital with bilateral labyrinthine symptoms, namely stone deafness, vertigo, vomiting and slight nystagmus to the right which disappeared in twenty-four hours. The middle ears were normal. Caloric tests failed to elicit any response.

Bilateral paralysis of the eighth nerve was complete. A vesicular rash was present on the extensor aspects of both hands and feet, stated by Dr. Molesworth to be toxic in origin.

One week later an infranuclear paralysis of the facial nerve developed on the left side and after persisting for a few weeks, facial movement was completely restored.

Paresis of the left hypoglossal nerve was also observed for a few weeks. The fundi have never manifested any abnormality and otherwise the nervous system was reported normal at all times.

Throughout the period of his labyrinthine disturbance the temperature hovered about normal and the pulse rate remained about 80. The Wassermann test yielded no reaction. Lumbar puncture returned clear fluid, not under increased pressure. The cells were four per cubic millimetre. Globulin was not increased and the fluid did not react to the Wassermann test.

Culture of the nasal pus yielded a Gram negative coliform bacillus, but blood culture was sterile.

The white blood cell count was 12,800 per cubic millimetre. Differential cell count revealed: Neutrophile cells, 73%; small lymphocytes, 18%; large lymphocytes, 8%; large mononuclear cells, 1%. Potassium iodide, one gramme (fifteen grains) was given thrice daily for three weeks and no surgical procedure was indicated.

The patient has now improved greatly in general health and is gaining weight. Complete bilateral paralysis of the auditory nerves persists and Bárány's tests show no vestige of returning function. Loose sequestra will be removed in time from the maxilla which still drains freely.

While a diffuse gummatous meningitis would seem improbable on the above findings, they might point rather to a toxic neuritis of *Bacillus coli communis* origin probably about the brain stem in which position the seventh and eighth nerves are almost in one common sheath.

CASE II.

H.A., aged twenty-two months, was seen at the Royal Alexandra Hospital for Children on November 18, 1924, with signs of an acute osteomyelitis of the right superior maxilla complicating diphtheria and a secondary broncho-pneumonia.

The face was œdematous and fistulæ leading down to bone were present at the site of a recent incision beneath the right inner canthus and also beneath the lip. Two suspicious teeth had been extracted. The child was extremely emaciated and was desperately ill. The pulse rate was 128 and the temperature was subnormal.

Intranasal examination revealed no abnormality. Under ether the right superior maxilla was exposed through the usual incision in the gingivo-labial fold. No evidence of infection was found in the antrum, but necrosis was apparent throughout the whole alveolar process and alveolar fossa and extended into the malar bone. The orbital floor was nonexistent. The cancellous spaces everywhere yielded a thin extremely offensive seropus. Drainage being established, separation of sequestra was then awaited during the ensuing months, the child rapidly improving and gaining weight meanwhile.

Four months later an abscess recurred beneath the right inner canthus and was incised.

A skiagram then revealed necrosis extending across the symphysis into the alveolar process of the opposite side about the left upper central incisor. Loose sequestra were removed three months later from the right maxilla through the original buccal wound.

Two weeks later broncho-pneumonia supervened of which the child died.

[1] The first patient described herein was shown at a meeting of the New South Wales Branch of the British Medical Association on June 10, 1926.

NEURO-MUSCULAR INCOORDINATION OF THE ALIMENTARY CANAL IN INFANTS: REPORT OF TWO CASES.

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Congenital Obstruction in the Lower End of the Œsophagus.

F.T., a female, aged four years, was admitted to the Royal Alexandra Hospital for Children when two years and ten months old, her weight at that time being 6·7 kilograms (fifteen pounds).

At birth the weight was said to have been 3·6 kilograms (eight pounds). Vomiting commenced when a few days old and continued with intermissions up to the time of admission to hospital. Breast feeding had been given alone for seven months and was then discontinued on account of the mother losing her milk. Several artificial foods were then tried and at each change there was an apparent improvement for a time. Her weight at twelve months was five kilograms (eleven pounds). The condition was at first thought to be due to pyloric stenosis and repeated attempts had been made to wash out the stomach. When admitted to hospital, she was extremely emaciated, the weight being only 6·7 kilograms, the tissues were almost dehydrated and there was such extreme weakness that she was unable to move her limbs. The abdomen was carinated, there being no gas whatever in the intestinal tract.

An intraperitoneal injection of saline solution was given and when this had been absorbed, gastrostomy was performed. After feeding through the gastrostomy wound for several days, she was able to swallow a small amount of liquid food as well. Repeated attempts to pass a stomach tube failed. Several examinations under X rays after opaque meals had been swallowed revealed that an obstruction existed at about the junction of the middle and lower thirds of the œsophagus, but the obstruction did not appear to be exactly in the same place on each occasion. Moreover on one occasion the meal seemed to pass quite readily into the stomach, whereas on the other occasions only a thin trickle passed the obstruction and the rest remained in the dilated œsophagus above it. No pouching of the œsophagus was seen on any occasion. She gained in weight and commenced to walk about the ward a few months after the operation. About twelve months later I managed to pass a gum elastic bougie through the obstruction from below and by attaching a silk thread to this I was able to draw several soft rubber catheters through the obstruction from above. I was surprised to find the ease with which a number 15 catheter passed in this way, whereas I had never been able to pass any instrument from above. Attempts to pass an instrument by the aid of an œsophagoscope also failed. The child is now comparatively well, but still has to be fed partially through the gastrostomy wound.

Commentary.

This condition appears to be of the nature of cardiospasm or neuro-muscular incoordination in the wall of the œsophagus. There is evidently a dilatation of the lower end of the œsophagus with hypertrophy of its walls. The condition is due to neuro-muscular incoordination and not to a mechanical obstruction. Dr. John Fraser in *The British Medical Journal* of February 27, 1926, gives a full account of these conditions. He is inclined to place these cases in the same class as congenital stenosis of the pylorus, Hirschsprung's disease, hypertrophic ilial obstruction and possibly intussusception. He says:

> The process which explains these errors, is one which in its beginnings is functional, a delay in the acquisition of the power of inhibition by certain segments of the alimentary canal, segments which are proximal to the sphincters and which correspond to areas of different nerve type junction.

Congenital Obstruction at the Pelvi-Rectal Junction (O'Beirne's Sphincter).

M.C., a female, aged four and a half months, was sent in to the Royal Alexandra Hospital for Children on account of extreme constipation and periodical attacks of abdominal distension. She was healthy at birth, but soon became constipated. The mother stated that she could never get the bowels to move without aperients and then had to follow these with enemata. She found a difficulty in giving an enema, as the fluid seemed to come back as soon as a very small quantity had passed into the bowel.

The child was fairly well nourished, but rather pale and flabby. The abdomen when examined by me was quite flaccid, although at times according to the mother it became greatly distended. One could feel at times a mass through the abdominal wall described by the doctor who sent the child to me as being at times like an intussusception and at times like a floating kidney and this description fitted it quite well. It was not due to hardened fæces, but was due to the contraction of the hypertrophied bowel wall, as it quite disappeared under anæsthesia. No visible peristalsis could be seen, however, during my examination. An attempt was made under anæsthesia to give an opaque injection and investigate the condition under the X rays, but it was found that only a few ounces of fluid could be injected. An X ray picture was taken and it was found that the rectum was distended with the opaque fluid and a small trickle had passed into the sigmoid. It appeared as if there was a mechanical blockage in the region of O'Beirne's sphincter. About a week later the child got what appeared to be an attack of gastro-enteritis and died. *Post mortem* examination revealed typical Hirschsprung's disease. There was dilatation and hypertrophy of the whole of the colon above the pelvi-rectal junction. There was no narrowing of the bowel in this region as one would have been led to suspect from the history.

Commentary.

This case is interesting as being a very similar condition to the first case, but with the obstruction at the other end of the alimentary canal. Dr. John Fraser in the article referred to above describes the condition as:

> Occurring at a situation, where a sympathetic nerve supply comes in contact with a muscular tissue provided with a parasympathetic innervation affecting a segment of the gut on the proximal side of a sphincter, associated with hypertrophy of the muscular fibres (though in this instance the gas content of the large bowel produces a coincident dilatation), the disease first becoming evident in the weeks immediately succeeding birth. This combination of circumstances suggests an etiology similar to that of congenital hypertrophy of the pylorus and congenital hypertrophy of the ileum—an uncontrolled contractive function, a delay in the acquisition of the power of inhibition, combined it may be, with achalasia, an insufficient relaxation of the associated sphincters.

Reviews.

RELIGION AND THE PSYCHOSES.

A RATHER unusual departure from the ordinary is the occasion of a medical man giving a set of lectures to priests of religion upon a medical subject. In a book entitled "Religiosity and Morbid Mental States," Dr. H. I. Schou, head of the Hospital for Mental Diseases, Dianalund, Denmark, has published the lectures which he delivered to the younger priests of Denmark at the University of Copenhagen.[1] The lectures are translated into English by Mr. W. Worster and in the words of the author "the object of the lectures is to supply the clergy with a guide to their understanding of the way in which religious soul life and morbid mental states are associated." The view set forth is from first to last the author's own and it is probably one of the first attempts on the part of a medical man to study the religious psychology of the insane. The book is well written and the teachings contained therein are on well established lines, so that the student will not have to unlearn later on what he has learned today. Dr. Schoe impresses upon his audience the fact that people suffering from mental diseases are ill, just as much as people suffering from diseases of other parts of the body are ill. The recoverable and non-recoverable types of mental disease

[1] "Religiosity and Morbid Mental States," by H. I. Schou, M.D.; translated from the Danish by W. Worster, M.A.; 1926. London: Methuen and Company, Limited. Post 8vo., pp. 120. Price: 5s. net.

are discussed and the association of religious ideas in each is explained. "In the opinion of psychiatric authorities a true and healthy attitude towards God is not only harmless as regards mental health, but directly preservative." Dr. Schou states that the spiritual diet should be issued just as ordinary diet is given to or withheld from different patients. In some cases the Bible must be taken away from the patient altogether, because the mental state allows misinterpretation of certain passages, whilst in other cases the reading of the Bible is beneficial. The condition of only 0·5% to 1% of the total number of insane admitted to mental hospitals is due to religious influences. The great psychiatric textbooks make no mention of religious experiences among the ætiological factors in the psychoses and especially not among the psychical causes. The reasons why religion gets so hopelessly mixed up with the insane ideas is fully explained. This book should be of great interest to medical men and also to ministers of religion who sincerely wish to make themselves of some use when visiting the sick.

MATERIA MEDICA.

ANOTHER edition, the eleventh, of "Materia Medica and Therapeutics," by R. W. Wilcox, has been necessitated by the appearance of the United States Pharmacopœia X.[1] The section dealing with pharmacy and *materia medica* has been rewritten and the whole volume revised. Cross references have been inserted and an exhaustive index added. The work is divided into two parts, the first being devoted to *materia medica* and pharmacy and dealing with pharmaceutical processes, the various kinds of preparations, their dosage and the art of prescribing. The therapeutic agents are divided into two classes, the organic and the inorganic *materia medica* and a classification is adopted based on the grouping of the articles according to the chemical or physiological divisions to which each belongs. The second part deals with pharmacology and therapeutics, the classification of the remedies being according to their physiological action. The actions of the drugs and their therapeutic uses are described shortly but very clearly and this portion of the book has been brought thoroughly up to date. The toxicology of the more commonly used drugs is efficiently dealt with. It is quite refreshing to see that the enormous number of extrapharmacopœial drugs and patented preparations which are being daily added to and are mostly ephemeral, find no place in this volume.

EPILEPSY.

MAKING use of a vast amount of material at their disposal in the asylums and hospitals since the war R. G. Rows and W. E. Bond have investigated epilepsy and published the results under the title "Epilepsy: A Functional Mental Illness."[2] The conclusions they arrived at are that epilepsy is due to a stimulus which revives the memory of an unpleasant nature. This memory produces an emotional state which causes generalized vasomotor changes in the brain and the whole body and the resultant fit occurs. Any pathological changes found in the brain *post mortem* are the result of the frequently repeated vasomotor changes. Treatment is by exploration, explanation and reeducation. In short the whole disease according to the authors is on a par with the psychoneuroses which were so familiar to the medical profession immediately after the war. The authors have not made these statements lightly but have searched the literature dealing with experiments upon the cerebral cortex exhaustively and have quoted freely from them in support of the thesis they uphold. The first thought that comes to the mind of the reader is why if this disease is the same as the psychoneuroses, has it hitherto been overlooked by those ardent psychoanalysts who swarmed the country about the time of the end of the war and later for a few years? Another thought is why are all the patients ex-soldiers with the unpleasant experiences of war? What about the child epileptic and the idiot epileptic and the female epileptic? They have been with us for centuries and the same lines of investigation have been followed in their conditions, but without the same results as those obtained from the ex-soldiers. The authors have dealt exhaustively with the symptomatology of epilepsy and the information in this section of the book alone makes very interesting reading. Unfortunately one of the authors, R. G. Rows, did not live to see his manuscript published. In perusing the general view of the experimental work on the cerebral cortex in the production of fits, the reader at once compares the methods of experimental excitation by the electrode with the method of excitation by a tumour or a pathological condition and decides that the experimental method is very little help to the clinician in this matter. The book should be read by all those whose interests lie in the treatment of epilepsy.

A GREAT HOSPITAL.

THOSE members of the medical profession in Australia who have in their post-graduate years or during their war service penetrated as far east in London as Whitechapel, will be interested in the history of the foundation and development of the London Hospital.[1] On September 23, 1740, seven gentlemen met in a tavern and from that meeting has grown the largest of the hospitals of Great Britain. Mr. E. W. Morris, the House Governor of this institution, tells in this the third edition of his book how a six months' lease of a house was taken and that within a fortnight of the opening of the infirmary, the treasurer reported that: "there be only one shilling in the bank."

In spite of many difficulties the Hospital grew steadily and in 1757 was removed to its present site, to a building at that time containing one hundred and sixty-one beds. It now has nearly one thousand beds.

Mr. Morris in his early chapters gives a very interesting account of the hospital treatment of the sick poor in the centuries preceding the foundation of "the London." He tells how Rahere, the Jester of Henry I., tired of his court life and tired perhaps of endeavouring to amuse the King after the drowning of his only son in the *White Ship*, found religion and founded the Hospital of Saint Bartholomew. Before the eighteenth century only three great hospitals existed in London—Saint Bartholomew's, Saint Thomas's and Saint Mary's of Bethlehem.

Many interesting anecdotes of the medical profession of the day and of the barber-surgeons and their apprentices are given. The Medical School attached to the hospital was founded in 1783 mainly by the exertions of Sir William Blizard whose career as surgeon for many years is fully described. As regards the nurses, Mr. Morris tells how at the beginning the nurse was usually an old woman who on account of her age and very often on account of her habits was worse than useless to the community and was classed with "beadles, porters and other inferior servants." Space will not permit of further quotations. Suffice it to say that the book is full of interest and its reading makes us realize what a great work was commenced by those seven gentlemen nearly two hundred years ago.

[1] "Materia Medica and Therapeutics, Including Pharmacy and Pharmacology," by Reynold Webb Wilcox, M.A., M.D., LL.D., D.C.L.; Eleventh Edition, revised in accordance with the U.S. Pharmacopœia, X., with Index of Symptoms and Diseases; 1926. Philadelphia: P. Blakiston's Son and Company. Demy 8vo., pp. 810. Price: $5·00 net.

[2] "Epilepsy: A Functional Mental Illness: Its Treatment," by R. G. Rows, M.D. (London) and W. E. Bond, M.R.C.S. (England), L.R.C.P. (London); 1926. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 146. Price: 8s. net.

[1] "A History of the London Hospital," by E. W. Morris; Third Edition, Revised and Largely Rewritten; 1926. London: Edward Arnold and Company. Post 8vo., pp. 303, with illustrations. Price: 7s. 6d. net.

The Medical Journal of Australia

SATURDAY, AUGUST 28, 1926.

Cardiac Rheumatism.

By the last mail from Great Britain members of the British Medical Association in Australia have received as a supplement to *The British Medical Journal* a copy of a report of a special subcommittee of the Science Committee of the Association on rheumatic heart disease in children. By a coincidence we publish in this week's issue papers by Dr. M. J. Plomley, Dr. C. G. McDonald and Dr. Harvey Sutton on the same subject. That the subject is one of overwhelming importance has often been emphasized in this journal. Rheumatism is one of the most prolific causes of cardiac disability, particularly in childhood, and diseases of heart and of the vascular system cause more deaths than any other group of diseases. Moreover the economic aspect, so admirably discussed by Dr. McDonald, is of considerable moment to the Australian Commonwealth.

The report of the Science Committee is of great interest and should be read carefully by all interested in the subject. It is divided into four parts. The first part deals with the environmental and predisposing conditions, the second with the bacteriology of the affection, the third with the effect of tonsillectomy on rheumatic infection in children and the fourth with the after care of rheumatic children. Some of the findings of the Committee call for special consideration. Of the first importance is the conclusion of Dr. Reginald Miller that dampness of the dwelling house is a definite predisposing factor. The other factors to which the committee attach importance, are heredity and poverty. If the part played by these factors can be definitely assigned, it will be possible to undertake prophylactic measures of much value. Dr. Miller's data, however, are not sufficiently complete to place the matter beyond question and his figures are such that reasonable doubt may be expressed as to the justification for his views.

Thus he finds that of one hundred and ninety-six rooms examined one hundred and twenty-two were damp and seventy-four were dry. He gives no standard of dampness, but apparently relies on a statement as to whether clothes kept in cupboards became damp. No estimation of humidity of the atmosphere was made. It would have been of interest to have had a survey of the dampness in terms of measured humidity of a series of houses in the neighbourhood under investigation.

Comparison of these figures with those obtained from houses formerly occupied by rheumatic patients would possibly have yielded important information. Dr. Miller found that 62·2% of his patients were living in damp houses when first attacked by the disease. In other words nearly 40% of the patients came from dry houses. The relative closeness of these figures raises the possibility of the existence of other factors hitherto unrecognized. Evidently humidity of the atmosphere alone does not play an active part in the production of acute rheumatism. Dr. Mark Lidwill's statement in discussing the three papers published in this issue that acute rheumatism is prevalent in Ballarat, a city with a dry climate, is significant and the same may be said of the reference by Dr. Miller to the absence of rheumatic infection at Eton College and Beaumont College, both situated on the River Thames in a moist atmosphere. It will be noted that Dr. Harvey Sutton concludes from his Australian investigations that the emphasis laid on damp and similar factors may be exaggerated and that acute rheumatism behaves in its spread like other nose and throat infections. Though the bacteriology of acute rheumatism is not generally regarded as settled, the findings of Dr. Carey Coombs and Dr. F. J. Poynton in the second part of the report seem to point to the ultimate acceptance of the streptococcic hypothesis. Dr. Plomley is evidently prepared to accept this view, for he recommends the use of vaccines prepared from streptococci isolated from rheumatic patients. He adds that at the Royal Alexandra Hospital for Children polyvalent streptococcic vaccine is used at the present time. The subject of tonsillectomy is one which will give rise to much difference of opinion. Dr. Reginald Miller in his report brings

forward evidence tending to show that a milder type of rheumatic affection is likely to occur in a child whose tonsils have been removed. He issues a necessary reminder, however, that when tonsillectomy is undertaken in these circumstances, only one factor in the production of the disease is being attacked. The committee recommends careful and discriminating use of the operation. This is in keeping with Dr. Harvey Sutton's statement that tonsillectomy should be carried out whenever an unhealthy tonsil is found in a child with a rheumatic history. At the same time he does not define an unhealthy tonsil. Dr. George A. Allan and Dr. A. P. Thomson in the fourth part of the report lay emphasis on the need for the provision of prolonged institutional treatment for cardiac cripples in Great Britain. Dr. McDonald in his paper pleads for the establishment of cardiac clinics in Australia. Emphasis needs to be laid on the fact that though the establishment of cardiac clinics and the provision of hospital facilities for affected children are necessary, they do not touch the real problem of prevention. The community has a definite responsibility in regard to cardiac cripples and persons affected by rheumatism, but prevention must always be paramount.

A careful perusal of the report and of the papers published in this issue will reveal that much remains to be discovered and that the lessons learned have not received application. Conditions of climate and of living are different in Australia from those in the Old Country. It is not unlikely that the results of a carefully planned inquiry in Australia would shed additional light on what has already been revealed in Great Britain. The need for such an undertaking is clamant. Of clinical material there is abundance and men and women capable of doing the work are not lacking. The proper body to undertake this investigation at the present time is the Commonwealth Department of Health. The field covers the whole of the Commonwealth and the Department has both the men and the requisite machinery. Much research of value has been carried out by this body in the past and it would in all probability be only too glad to undertake an investigation of such national importance. A request to the Department should come from the Federal Committee of the British Medical Association in Australia. In matters of this sort, however, the Federal Committee is useless. It has no power of initiation. The process of setting its machinery in motion is exceedingly cumbersome and its wheels revolve at such infrequent intervals that its placidity might as well be left undisturbed. The Commonwealth Department of Health must undertake this investigation on its own initiative.

A CANCER RESEARCH APPEAL.

FROM a purely sentimental point of view it would be difficult to choose a more attractive subject for appeal than cancer research. An organized campaign to discover the cause of cancer forms a fine bait; if the objective is to unearth a cure of cancer the appeal becomes irresistible. It is unfortunate that a different language has to be used when the organizers of a fund endeavour to obtain contributions from the public for the purpose of attacking the cancer problem from that which can be spoken to the medical profession. The medical profession recognizes the value of research. To the serious student, to the biologist, chemist, physicist and hygienist scientific research means everything; it is the essential for progress; it is the parent of knowledge; it is the objective of life. On the other hand, cancer is a term disliked because of its indefiniteness. It is uncertain whether the same conditions govern the ætiology of all forms of malignant disease. Hitherto sound work has been done in connexion with the pathology, biology, chemistry and physics of the carcinomata, but the investigators who have set out to make the great discovery, have failed lamentably, even if they have stepped into the limelight for a brief period. The campaign that can command the approval and encouragement of the medical profession, is one based on the scientific sifting of all the facts that can be elicited.

A little more than a year ago a committee was appointed at the University of Sydney for the purpose of raising the sum of £100,000 for cancer research. The scheme was conceived in the proper spirit and the plan of the work was drawn up on

wide and promising lines. Some important work has already been completed, or perhaps it would be better to modify the statement; some important work has been taken to the stage of publication. It is impossible to predict the final value of the investigation that will be carried out under the auspices of the University of Sydney Cancer Research Committee. Results are not purchasable. Research is of necessity costly, even if the investigators are paid mere pittances. We have called attention on many occasions to the urgent need of creating a career in research, so that the load stone of medical practice may not be strong enough to rob science of its gifted workers. But even if £100,000 is a very small sum of money wherewith to organize a great research and even if it is a pity that the committee has chosen cancer research instead of general research, there are many powerful reasons why it should receive support. In the first place there is the general proposition that the practising portion of the medical profession exploits the research worker. The general practitioner uses the knowledge laboriously wrested from Nature by his sweated colleague. He charges his patients high fees for applying this knowledge, but he makes no contribution to any fund to support research work. In the second place Australia has a reputation to gain. In other parts of the world medical and other scientific workers have achieved a great deal in the laboratory. In Australia the amount of research work in medicine has been small. Some very excellent work has been carried out in Sydney, in Melbourne and in Adelaide. More than that, some Australian graduates have gained distinction in other countries as research workers. But Australian medicine has a long way to go to reach a leading position. The third argument in favour of support being given to the Cancer Research Committee's plans is that of precept. The medical practitioner knows the importance of research and if he supports it in a tangible manner, his lay neighbour may be induced to follow suit. Lastly the member of the medical profession is after all a citizen and the cost of applying measures for the improvement of the common weal should be borne by the citizens. For these reasons we have acceded to the request of the Honorary Organizer of the Committee of the Cancer Research Fund to invite the members of the medical profession in Australia to purchase books of stamps in support of the campaign. Books of twenty shilling stamps are obtainable at the office of this journal for one pound. The names of those purchasing stamps will be published in the columns of the journal. We are not responsible for the wording on the stamps. But we shall hold ourselves responsible to act as intermediaries between the medical profession and the University of Sydney Cancer Research Committee. We ask our readers to send remittances for books of stamps as soon as possible.

Current Comment.

THE EPILEPTIC SEIZURE.

IT has often been remarked that the profounder the ignorance prevailing in regard to the nature and ætiology of a disease process, the larger is the number of hypotheses that have been put forward to explain the condition. Very many attempts have been made to determine the nature of epilepsy and with each attempt a new doctrine has been propounded. In our issue of last week we published an article by Dr. W. A. T. Lind on this subject. Like all the work emanating from Dr. Lind's pen this article is extremely interesting and worthy of careful study. Dr. Lind exhibits much courage in approaching this difficult problem and he displays skill and resource in endeavouring to solve it. He has postulated that idiopathic epilepsy is a definite disease entity, not a group of diseases. It would seem that there is a grave risk of error if a single set of ætiological agents is sought to explain a group of diseases, each of which may result from its own causative factor or factors. In cancer research many workers have accepted without challenge or question the assumption that all forms of malignant disease are produced in the same way. It is true that Dr. Lind protects himself to some extent from fallacious deduction by distinguishing between congenital insanity with epilepsy, acquired insanity with epilepsy, epilepsy without insanity, epileptoid seizures in connexion with other pathological processes and convulsions due to tumours and other gross cerebral lesions. It is extremely difficult to build up a complete story of the production of the disease idiopathic epilepsy on the triad, heredity, youth and chronic intoxication. It does not seem to be a safe procedure to regard the recurrent convulsions as the disease itself. The inherited factor must be a physical or a chemical alteration of the cells of the cerebral cortex, possibly associated with similar changes in other cells of the body. Dr. Lind claims that these inherited changes are undoubtedly present, but he has no data on which an analysis of the changes can be based. Youth as

should not be listed as a causative agent of epilepsy. All that can be asserted at present is that the abnormal cells of the cerebral cortex are more susceptible to noxious influences in the early years of life than at a later date. The third factor, the intoxication, is supposed to represent the immediate cause of the convulsion or of the heightened irritability of the already abnormal cells. It is very easy to ascribe to some unknown products of digestion or intermediate products of metabolism the function of acting as a powerful stimulus to an overexcited cortical cell. These toxins have not been isolated; their chemical and physical nature is quite unknown; no one has produced any evidence of the existence of a toxin that has any specific affinity for highly specialized nerve cells. Krainsky has sought to establish a causal relationship between a combination of carbon dioxide and some amido bodies and epilepsy, but has failed to adduce experimental evidence. It is, however, reasonable to assume that certain chemical substances would act as irritants to nerve cells and give rise to an excessive response when the cells are pathologically hyperirritable. The difficulty of dissociating the convulsions from the underlying pathological condition is well exemplified in the work on the blood changes before, during and immediately after the epileptic seizure.

Dr. O. Wuth has undertaken some elaborate work in this direction[1] and has shown conclusively that the changes in the cellular and dissolved elements of the blood are the result and not the cause of the fits. There is usually a leucocytosis in which the polymorphonuclear leucocytes are chiefly concerned. At the same time the eosinophile cells are reduced in number during the attack. The disturbance of the white cells passes off gradually after the convulsion. The uric acid content, the non-protein nitrogen, creatinine and serum protein are increased during or shortly after the attack, save in *status epilepticus*. These changes cannot be distinguished from the blood changes after physical overexertion. They occur during all forms of seizures and are roughly proportional to the amount of nervous energy expended. Dr. Wuth does not seem to have examined the serum for products of incomplete protein cleavage. But even if he had sought and found some irritant body, he would not have been justified in concluding that it is the actual exciting cause of the fit. It is strange that the bio-physical condition of the cortical cells has not been more closely studied. No real progress can be made in the investigation of the ætiology of epilepsy until this condition of the cells in the intervals between the convulsions has been determined.

[1] *Bulletin of the Johns Hopkins Hospital*, June, 1926.

ACHYLIA GASTRICA.

By *achylia gastrica* is meant a complete absence of the acid gastric secretion from the stomach. In considering the condition it is necessary to remember that the majority of patients with apparent achlorhydria have a normal secretion of acid, but that this is neutralized as rapidly as it is secreted by an abnormally large regurgitation of duodenal alkali. Apart from achlorhydria of this kind the production of acid gastric secretion is permanently or temporarily suspended in many conditions. This state of affairs may be brought about in various ways. In the first place nervous stimuli may determine their absence; in the second place the glands themselves may be destroyed as a result of disease or inflammation. It is also conceivable that hormonic action may be so upset by abnormalities in associated organs that formation of secretion is suspended.

The subject of *achylia gastrica* has recently been discussed by Dr. Knud Faber.[1] Dr. Faber points out that achylia was first observed as a sign of cancer of the stomach and was interpreted as the result of atrophy of the mucous membrane and especially of its glands and also as a sign of complete absence of glands. Ewald was one of the main supporters of this view. Einhorn, however, claimed to have found well preserved gastric glands in chronic achylia. He also reported recovery from chronic achylia and pointed out that this was incompatible with the view of absence of glands. Another view held by Martius was that the condition was occasioned by a constitutional weakness of the organ which might be hereditary. He called this form *achylia gastrica simplex* or constitutional achylia. In opposition to these views Dr. Faber advances his own conception of the condition. He maintains that chronic achylia has an exogenous cause and is produced by external factors acting on the stomach either by direct irritation of the mucous membrane or through the circulation by a toxic action on the gastric parenchyma. He holds that the anatomical picture of gastritis will occur in either case and that the gastritis may lead to more or less atrophy of the glands although at an early stage of the gastritis there is no question of atrophy. He points out that for this reason achylia may be found in combination with well preserved glands and undamaged gland cells, although a definite gastritis may be present. In his opinion gastritis is not a superficial catarrhal inflammation, but a disease of the parenchyma of the glands analagous to nephritis or hepatitis.

Dr. Faber discusses the pathogenesis of *achylia gastrica* from three points of view: those of clinical experience, histological examination and experimental investigation. The fact that achylia is frequently symptomless is not incompatible with the view that it is due to a gastritis. The most commonly recognized exogenous achylia, alcoholic gastritis, is commonly quite free from symptoms and the same holds good of other forms. Moreover, this absence of symptoms is as a rule only temporary. In connexion with the clinical findings in achylia Dr. Faber points out that much may be learned from the study of achylia in childhood. Many observers have been unable to find anything which might be regarded as congenital achylia. The

[1] *The American Journal of the Medical Sciences*, July, 1926.

causes of achylia which can be detected in young children, are chiefly parenteral febrile diseases and affections of the gastro-intestinal canal.

Analagous conditions are met with in adults. An example is seen in the achylia resulting from the excessive use of alcohol. Vogelius investigated a large number of patients with chronic alcoholism. He found that patients who came into hospital with recurrence of gastritis, had achylia and that the achylia subsequently disappeared. After several bouts of illness, the achylia became constant. In contrast to this there is the change which occurs during a general intoxication of the organism and in acute infections. Such infections include enteric fever, paratyphoid fever and dysentery. Achylia is commonly seen after these infections. Recovery often occurs, but in a certain number of cases the achylia is permanent. Achylia also occurs in chronic affections such as tuberculosis and syphilis and in non-infective conditions such as Graves's disease and pregnancy. Dr. Faber concludes from this that the gastric mucous membrane and its secretory apparatus behave in a manner similar to that of other parenchymatous organs, especially the liver and kidneys, and that it is affected by infections and intoxications.

In discussing the question from the point of view of histological appearances, Dr. Faber points out that in bygone days the stomach and intestines were not included in the extensive investigation into morbid anatomy because of the fact that the mucous membranes were so quickly acted upon by digestive fluids and putrefactive processes. In 1899 Drs. Faber and C. E. Bloch introduced the method of injecting 10% "Formalin" into the abdomen immediately after death. Since then it has been possible to carry out complete examinations. Dr. Faber describes the various stages of inflammation in the gastric wall and gives illustrations of the various stages from the early infiltration of round cells up to the appearance of lesions in the glands, their separation and ultimate atrophy. At this stage the stomach wall consists only of granulation tissue covered by the surface epithelium of the stomach; there is complete anadeny. Other changes may be observed. These include the formation of lymphoid follicles, cystic formation and the transformation of the epithelium of the stomach into intestinal epithelium containing goblet cells. Lange found intestinal epithelial elements scattered in the epithelium of ten among fourteen stomachs taken from patients who suffered from gastritis and achylia. Dr. Faber regards it as probable that the heterotopic formations occur especially when gastric secretion has ceased and that the mucous membrane therefore functions as intestinal mucous membrane.

As a result of experimental investigations Dr. Faber concludes that a passing achylia of nervous origin may occur, but that a chronic achylia arises either by direct injury to the stomach or by hæmatogenic infection. Dr. Faber's conclusion of the whole matter is that when *achylia gastrica* is excited through nervous channels, it can persist only for a short time, but that apart from this it is due to the same causes which produce disease in other organs—direct irritation or hæmatogenous intoxication by bacterial toxins or autotoxins. With the possible exception of the initial stage of intoxication the natural term for the disease is gastritis and by this is to be understood a disease of the glandular parenchyma of inflammatory origin.

In considering this work of Dr. Faber it will be admitted at once that the explanation offered by him is doubtless correct in many instances. Whether it holds in all cases is another question. As a matter of fact, Dr. Faber saves himself to a certain extent for in connexion with one point in the middle of his article he writes: "We cannot exclude, clinically or anatomically, that at all events in some cases the pathogenesis may be different from what we have put forward." Two cases quoted by him are interesting. In one illustration are depicted glandular cells from the stomach of a patient suffering from cancer of the stomach who had manifested symptoms for half a year before operation and who had complete anacidity. By Altmann's stain he observes that the chief cells and especially the acid secreting cells are absolutely normal and prepared to resume their secretion should the harmful influence subside. He compares this with cells from another patient with cancer of the stomach. In this instance the cells have commenced to degenerate and will no more be able to resume their function. There is no discussion of the possibility of the malignant growth having upset the hormonic balance and caused an achylia with secondary changes in the gastric cells. This is an aspect of achylia which calls for special consideration.

THE POST-GRADUATE HOSTEL.

SOME prominent medical practitioners have recently formed the Post-Graduate Hostel in London. The object of this body is to offer the hand of friendship to medical practitioners visiting London for the purpose of attending post-graduate courses. It is proposed to extend to medical visitors from overseas and the provinces a warm welcome and to provide social and professional intercourse during their stay in the metropolis. The Committee of the Post-Graduate Hostel have undertaken to remove the impression that Londoners are cold and unhospitable. It is recognized that the visitor is often lonely and isolated and experiences many difficulties in a great strange city. The movement has the approval of the British Medical Association, the Royal Society of Medicine and the Fellowship of Medicine. Among those who were instrumental in the inauguration were Sir Dawson Williams, Dr. Alfred Cox, Sir D'Arcy Power, Sir Thomas Horder, Mr. Donald Armour and Mr. A. P. Bertwistle. The hostel will be contained in the Imperial Hotel, Russell Square, London, W.C. 1, a large well appointed and centrally situated establishment. Applications for accommodation should be made to the manager of the hotel. It is a fine project and deserves the whole-hearted support of Australian practitioners visting London.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

The Faradic Current in High Ocular Tension.

E. BOURQUIN (*Révue Générale d'Ophthalmologie*, December, 1925), applying the faradic current to a painful eye, was surprised to notice a decrease in ocular tension. Further experiment with normal or nearly normal eyes confirmed the observation. The alternating town current was used, reduced by resistance to render it painless and applied for about five minutes. The author attributes the effect to the excitation of the ocular vasomotor nerve supply producing anæmia of the chorioid and hence hypertony. This agrees with the latest work on glaucoma which indicates that distension of the chorioidal vessels is an important factor in high tension.

"Diocaine" in Ophthalmology.

D. GOURFEIN (*Révue Générale d'Ophthalmologie*, January, 1926) enumerates the disadvantages of the effects of cocaine on the cornea, mydriasis and partial paralysis of accommodation and toxic action. For eighteen months he has used "Diocaine" prepared by the Society of Chemical Industry, Basle, and has found it very satisfactory. It is used in the strength of 2‰ to 5‰. In glaucoma it is of great service; it does not cause dilatation of the pupil and may be used for cataract extraction, tenotomy and advancement. It may be sterilized by boiling and is much less toxic than cocaine.

Intracapsular Extraction of Cataract.

HENRY SMITH (*Archives of Ophthalmology*, May, 1926) has added a new manœuvre to his technique for intracapsular extraction. He realizes the value of the lens "tumbling," that is removal of the lens with the lower edge first, as a safeguard against loss of vitreous and to this he attributes much of the success of the Barraquer method. In the past all immature and hard lenses were delivered upper edge first and a way has been sought to "tumble" such lenses by outside pressure. This he has successfully accomplished in the following manner. Pressure is made with the flat of the lens hook over the sclerotic below the corneal limbus, at the same time a smooth curved spatula with its convexity backwards, is applied over the middle of the corneal incision and sufficient pressure is exerted to prevent the upper edge of the lens from coming forwards. The result is that the lower edge is dislocated first and comes forward immediately when the point of the hook is brought up on to the cornea and insinuated behind the advancing lower margin of the lens. Delivery is completed by folding the cornea behind the lens and finally the upper edge to which the suspensory ligament is still attached, is raked off the wound by the concave edge of the hook.

The Pupilloscope.

F. H. ADLER (*Archives of Ophthalmology*, May, 1926) bases his paper on Groethnysen's account of Hess's pupilloscope showing the results obtained in various lesions of the pupillary pathways. The instrument measures the smallest difference in intensity between two lights which brings about a pupillary reaction, called the motor discriminative acuity or abbreviated, the M.D.A. In normal eyes the minimal difference between two lights must be as 95:100, expressed as the quotient 0·95. The lowest physiological quotient is about 0·84. The minimal difference which can be detected by the patient, is called the visual discriminative acuity (V.D.A.) and is found to be the same as the motor discriminative acuity in normal persons. In such a lesion of the sensory fibre of the left eye as progressive optic atrophy there will be a reduction in the motor and visual discriminative acuity. In the right eye the direct light reflex is normal and the consensual reduced; in the left eye the direct is reduced and the consensual normal. In a lesion involving the intercalated fibres of one side, that is between the anterior *corpus quadrigemminus* and the third nucleus, the following observation is obtained. In the right eye the direct light reflex is normal and the consensual normal; in the left eye, the direct reflex is reduced and the consensual reduced. This is unusual, for both sides are usually involved and both direct and consensual reflexes are reduced or absent. The convergence pupillary reflex is still present (as in the previous condition) and such a lesion gives the typical Argyll-Robertson pupil.

Operation for Juvenile Cataract.

G. H. BELL (*American Journal of Ophthalmology*, June, 1926) describes the disadvantages of the old method of operating on soft cataracts with a round pupil. The chances of infection through the corneal route are greater; there is apt to be entanglement of the iris or lens capsule in the corneal wound, leading sometimes to glaucoma; it is difficult to deal with the thickened capsule which is often left. After careful preoperative treatment and the use of 1% silver nitrate solution a preliminary iridectomy is performed. In four weeks discission of the lens is performed by the Ziegler method. The knife is introduced five millimetres behind the limbus, it enters the anterior chamber through the sclera and discission of the lens is accomplished by the "V-shaped method." If the lens swells too rapidly, a linear extraction is performed. In certain cases six weeks after the iridectomy a keratone incision is made behind the limbus, the lens is stirred up with a cystotome and washed out. The preliminary iridectomy is of great value; it makes the eye safer and enables all operations to be carried out at the back of the limbus.

Expulsive Chorioidal Hæmorrhage after Cataract Extraction.

H. V. WÜRDEMANN (*American Journal of Ophthalmology*, June, 1926) estimates that expulsive chorioidal hæmorrhage occurs in about three cases per thousand of cataract extractions. Recently within a few months the author met with three instances. The first patient, aged seventy-one, had a preliminary iridectomy performed and two years later a normal extraction in the capsule. Three days later he had an expulsive hæmorrhage. There were no signs of sclerosis of vessels. The second patient was a young man of twenty-nine with an opaque dislocated lens. Extraction was followed two days later by hæmorrhage. The third patient was forty-nine years of age and suffered from glaucoma for which Lagrange's operation had been performed on both eyes. The left eye was blind and it was decided to remove the cataract from the right eye. Hæmorrhage followed after a week. The causes assigned are glaucoma, hæmophilia and disease of the chorioidal vessels, sudden decrease in the ocular pressure, strain from vomiting or coughing. The blood comes from a ruptured chorioidal vein and collects between the sclera and chorioid. The only way to avoid it appears to be to refuse to operate on eyes with high tension.

The Trigeminal and its Ocular Lesions.

LESLIE PATON'S contribution deals mainly with *herpes simplex corneæ*, *herpes zoster ophthalmicus* and neuropathic keratitis (*British Journal of Ophthalmology*, June, 1926). In the first part the author gives a detailed account of the anatomy of the nerve and its centre. He points out that before it enters the orbit the ophthalmic branch divides into the lachrymal, frontal and naso-ciliary branches. Peripheral lesions involving the terminal distribution of the fifth nerve include recurrent erosions of the cornea or recurrent bullous or vesicular keratitis, superficial punctate keratitis and marginal dystrophy of the cornea. Dendritic ulcer of the cornea is the commonest form in which *herpes corneæ* manifests itself. It may occur as a local corneal reaction to the herpes virus without any evident affection or added to the herpes virus may be the lowering influence of influenza or pneumonia. Grüter discovered the transmissibility of *herpes febrilis*, the commonest manifestations of which are *herpes labialis*, *herpes facialis*, *herpes genitalis* and *herpes corneæ*. The virus belongs to the ultramicroscopical filter-passing group and can set up changes when transferred to the cornea of a rabbit. It may infect the central nervous system, producing a condition akin to, if not

the same as *encephalitis lethargica*. Usually dermotrophic, the virus on passing through a series of rabbits, increases in toxicity and becomes neurotropic. The author divides *herpes zoster* into two classes: "epidemic zoster" and symptomatic zoster. Epidemic zoster occurs as a definite infection with fever. It has a definite relation to chicken pox, the infective agent may be the same. Symptomatic *herpes zoster* is due to secondary involvement of the sensory nerve or posterior root ganglion in the course of some other lesion such as syphilis or tuberculosis or *tabes dorsalis*. Epidemic *herpes zoster* conveys an immunity against recurrence. In ophthalmic *herpes zoster* the two branches almost invariably affected are the supraorbital and the supratrochlear. The globe is affected in 50% and the cornea in 35% of all cases. Hutchinson claimed that the globe is never affected unless the naso-ciliary nerve is involved; there are exceptions to this rule. Complications are deep keratitis, iridocyclitis and optic neuritis, also oculomotor paralysis. The primary lesion is in the Gasserian ganglion. The relationship of *herpes zoster* to *herpes febrilis* is obscure. Antigens from patients with *herpes zoster* do not give reactions to complement fixation tests against the antigens of *herpes febrilis*, nor can the cornea of a rabbit be infected from *herpes zoster* vesicles. Other workers consider the virus the same in both. Neuropathic keratitis is a degeneration of the cornea, the result of lesions of the fifth nerve. It is generally seen after alcohol injection into the Gasserian ganglion. It is prevented by sewing the lids together. The author is not satisfied with the many hypotheses advanced to explain it; the chief of these are the trophic theory and the traumatic theory.

LARYNGOLOGY AND OTOLOGY.

Treatment of Congested and Enlarged Inferior Turbinates.

F. H. B. NORRIE (*Journal of Laryngology and Otology*, February, 1926) outlines a treatment for enlarged inferior turbinate bone by zinc electrolysis. His experience is based on treatment of over two hundred workers in jute mills, jute dust being very irritating to the nasal mucous membrane. Most of the enlargements treated were of the vasomotor variety, but bony excess can also be successfully dealt with by this method. In all cases enlargement secondary to sinusitis was excluded. His technique is as follows. Anæsthesia is obtained by local application of a 5% solution of cocaine and adrenalin together with blocking of the sphenoid palatine ganglion by injection. A shellac coated pure zinc needle is used. The shellac is removed from the needle's distal end so that the zinc will be in direct contact with the tissues except at and just deep to site of puncture. The needle should be inserted the whole length of the turbinate body and the terminal at the nose should be well insulated. Current is gradually increased from zero up to ten milliampères for ten minutes, then slowly reduced again to zero. The current is then reversed and gradually increased up to six milliampères for five to ten minutes in order to loosen the needle for withdrawal. Transitory headache, vertigo and a heaviness in the head are felt for from one to three hours after treatment. The author claims that more uniform results, less discomfort, lack of hæmorrhage, absence of after treatment make this method superior to the usual cautery or cutting operations. In a week to ten days, the turbinate manifests a linear depression over the site of the needle track and this gives a very clear airway. This result has been known to be maintained two years later.

Total Laryngectomy for Intrinsic Cancer of the Larynx.

LIONEL COLLEGE (*Journal of Laryngology and Otology*, January, 1926) reports the results obtained in fourteen patients operated upon for intrinsic cancer of the larynx by total laryngectomy. In all these persons the operation of laryngo-fissure was unsuitable. He gives details of the history, operation, pathological findings and end results in each case in full and includes illustrations of the removed larynges. Of the fourteen patients seven were alive and well without recurrence at periods of four to not less than one year after operation, three died from complications of the operation, three died from recurrence and one died from another cause. The management of patients in private practice is much simplified as the surgeon is in entire control and has the assistance of specially selected nurses. Of the author's private patients all have recovered except one who died of embolism one month after operation.

Ethmoidal Disease.

JOSEPH D. HEITGER (*Journal of the Indiana State Medical Association*, January 15, 1926) opened the discussion on ethmoidal disease before members of the State Sections of Ophthalmology and Oto-laryngology. He lays stress on the importance of thorough anatomical knowledge of the ethmoid area as essential to effective treatment and gives full details of the developmental architecture and topography of the ethmoidal labyrinth. Ethmoidal disease is usually associated with disease of the other nasal sinuses and its diagnosis can usually be made by elimination. To do this careful examination, X ray examination and lavage of suspected sinuses must be undertaken. Acute ethmoiditis usually subsides with local medication; failing this, any anatomical abnormality preventing drainage and ventilation of the nose should be corrected and this correction will often result in a cure. If any other sinuses are also involved, they should be treated first. Conservative repeated attacks on diseased ethmoid cells give better end results than the removal of the whole ethmoid labyrinth at one sitting. Twelve members joined in the discussion and the majority agreed that conservative surgery of the region gives better results and greatly reduces the risks of serious complications, which not infrequently follow the radical exenteration operation.

An Easy Method of Performing Tracheotomy.

KENELM H. DIGBY (*The Lancet*, January 16, 1926) describes in an illustrated article his technique in performing tracheotomy. He claims that his method is almost bloodless, even in a nearly asphyxiated patient with venous engorgement of the neck. The patient is placed on his back. An assistant with one hand on the forehead and the other on the occiput, produces full extension of the head, till the chin and sternal notch are in a straight line. Middle-line incision is made downwards from the lower border of the cricoid cartilage for 3·75 centimetres (one and a half inches). The deep fascia uniting the sterno-hyoid muscles is divided vertically and the fascia attached to the cricoid cartilage beneath is divided transversely just below its attachment A closed pair of artery forceps is then pushed downwards and backwards beneath this fascia and the thyreoid isthmus. These raised tissues are then clamped by two pairs of artery forceps placed parallel to one another. The tissues are then divided between these and lateral rotation of the artery forceps strips all tissues from the trachea and raises the first four rings to the level of the skin. The trachea is then opened gently in order to avoid damaging the posterior tracheal surface which by the forceps manipulation is closer to the surface than normal.

Paroxysmal Rhinorrhœa.

JOHN FREEMAN (*Journal of Laryngology and Otology*, September, 1925) holds that paroxysmal rhinorrhœa is but one of a group of protein idiopathies. Other manifestations of protein idiopathy include paroxysmal rhinitis ("nasal asthma"), hay fever, horse asthma, cat asthma *et cetera*, asthma, urticaria, eczema, angio-neurotic œdema, food sickness (vomiting, diarrhœa), epilepsy, migraine, paroxysmal arthritis, paroxysmal colitis, paroxysmal nephritis, insect fever *et cetera*, each of these being but local manifestations of a general sensitiveness. The presence of any of these other protein idiopathies will make the occurrence of paroxysmal rhinorrhœa the more likely, for they are sister symptoms. The protein irritant is merely one of the links of the causal chain of which other members include diathesis (heredity), nervous factors and trauma (regional factor). Freeman thinks that the most helpful line of treatment is to deal with the foreign proteins by avoidance or desensitization.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION together with the Sections of Pædiatrics, of Medicine and of Hygiene and Preventive Medicine was held at the B.M.A. Building, 30 to 34, Elizabeth Street, Sydney, on June 24, 1926, DR. R. J. MILLARD, C.M.G., C.B.E., the President, in the chair.

Rheumatic Heart Disease.

DR. M. J. PLOMLEY read a paper entitled: "Prevention and General After Treatment of Cardiac Rheumatism in Children" (see page 267).

DR. C. G. MCDONALD read a paper entitled: "The Economic Aspect of Rheumatic Heart Disease in the Adult" (see page 269).

DR. HARVEY SUTTON, O.B.E., read a paper entitled: "Heart Disease in Children of School Age and its Treatment" (see page 272).

DR. M. C. LIDWILL found that there was an enormous amount of material for discussion and an almost overwhelming number of facts to consider. He maintained that the most important consideration was in regard to the early diagnosis. He stated that he was convinced that many general practitioners were not able to diagnose whether tonsils were diseased or healthy. He had induced anæsthesia in a very large number of patients with nose and throat affections and had formed this opinion as a result of his experience. The practitioner usually looked at the throat and was satisfied if the tonsil appeared healthy on being viewed directly. But if the anterior pillar was pulled forward and the superior pole of the tonsil were squeezed, pus could often be expressed, even when the tonsil appeared to be healthy. Again he maintained that it was worse than useless to perform enucleation unless it were done completely. If a little tonsillar tissue was left behind, the operation was rather harmful than beneficial. The tonsils should be taken out completely or if the practitioner was not competent to do this, the patient should be referred to a specialist. Turning to the question of the pathogenesis of rheumatic heart disease, he mentioned the fact that it was not definitely known what bacterium caused rheumatic infection nor was there any certain information why this organism attack the heart. He himself was disinclined to attach any importance to any special affinity of the cardiac tissue for the organism. He thought that it was largely a question of blood supply. He referred to the two small end-arteries situated at the cusps of the mitral valves. These end arteries under normal conditions atrophied at adolescence. There was no anastomosis between these vessels. As a result of infection, emboli plugged up these arteries and caused an infarct, leading to necrosis. It was claimed that this was the beginning of rheumatic endocarditis. He was atisfied that if the tonsils were taken out, much of this form of infection would be prevented.

Dr. Lidwill remarked that he had had a somewhat extensive experience of medical practice in three cities. In Melbourne he had seen relatively little rheumatism. In Ballarat which was situated about 1,900 feet above the sea level and possessed a dry climate, rheumatism was very prevalent indeed. In Sydney the disease was not nearly so common. Sydney was very damp. It seemed to him that if climate had anything to do with the incidence of rheumatism, a dry climate rather than a moist one was a predisposing factor.

DR. J. MACDONALD GILL had found the papers very interesting. Dr. Harvey Sutton had looked at the subject from a wide point of view and had spoken from an extensive experience. He, the speaker, was convinced that environment had not much to do with the causation of rheumatic infection. There was some difference of opinion concerning the rôle of the tonsil in this connexion. Tonsillitis was an almost universal affection. It was very easy to ascribe rheumatism to tonsillar infection. He was very doubtful whether this was really important. Tonsillectomy had been performed on a very large scale during the course of many years, but no apparent decline in the incidence of rheumatic infection had been noted. On the other hand, he raised the question whether the severity of the infection had or had not declined. Hyperpyrexia had become very rare.

He thought that great difficulty would be experienced if an attempt were made to establish cardiac clinics. Many of the patients needed but little medical treatment. Again many patients came into hospital with more or less severe signs and symptoms, were discharged as soon as the symptoms disappeared, but returned within a short or moderately short time with a recurrence. These relapses took place repeatedly. It was not easy to know what to do with these patients. He was of opinion that the discussion of the subject that night would do much good. In conclusion he pointed out that heart disease in children was caused chiefly by the rheumatic infections, while in adults it was often the result of syphilis.

DR. COTTER HARVEY maintained it should be taught to students that acute rheumatism in children was pre-eminently a disease of the heart and not of joints. Students were taught that it was primarily a joint infection and that the myocardium and the endocardium were affected in a percentage of cases; thus endocarditis was a "complication." Was mitral stenosis or aortic regurgitation a sufficient diagnosis? Should it not be indicated what produced these endocardial lesions? For example, he suggested that, following Carey Coombs, they should speak of such conditions as "rheumatic mitral stenosis" and "syphilitic aortic regurgitation." All the previous speakers had referred to carditis and not to endocarditis, but in the hospital records they could search in vain for the term carditis; its importance as a diagnosis was not appreciated. Dr. Harvey cited the case of a girl to illustrate how the absence of prophylactic measures in rheumatic infection, due largely, he felt, to an insufficient diagnosis, could lead to a hopeless crippling of the heart. In his opinion mild forms of rheumatism, the so-called "growing pains" and other aches were not regarded by the general public as serious conditions and thus energetic steps were not able to be taken to combat the underlying infection. In this way heart affections appeared and got out of control.

DR. RICHARD ARTHUR, M.L.A., said that he had been much enlightened by the papers and discussion. In the days of his general practice he had seen but little of these rheumatic children. Perhaps he had missed them. It had struck him as being curious that the speakers had not endeavoured to push the ætiology of the condition back further. It was claimed that rheumatism was largely due to modern methods of nutrition, to deficient dietary. McCallum had taught that disease of the tonsil was caused by vitamin deficiency. None of the speakers had referred to septic conditions of the teeth as a cause of joint trouble in childhood and later life. He asked whether the factor of dietary deficiency and vitamins was of importance in this connexion. It had been mentioned that the young children of unskilled labourers were among the heaviest sufferers. This was probably the result of the insufficient and deficient diet of these children. He suggested that the prevention of rheumatism could be planned in this way.

Dr. Arthur ventured to believe that the new *Workers' Compensation Act* would have some effect on this matter. Large numbers of young people were entering industrial life. If a medical examination were required before admission into the ranks of the various forms of labour, a very serious problem in economics would arise. The medical profession might instruct a very ignorant government by indicating how these people could be admitted into the industrial ranks without grave risks. In conclusion Dr. Arthur proposed that the *Workers' Compensation Act* (New South Wales), 1926, should be discussed at a meeting of the Branch.

DR. R. J. MILLARD, C.M.G., C.B.E., congratulated the two Sections on having brought up a highly important subject for discussion. At the Coast Hospital three hundred

patients had been treated for acute rheumatism during the past four years. Many of these patients had been adults, but twelve of them had been below the age of ten years and thirty-six below the age of fifteen. These figures indicated that there was a considerable amount of rheumatism in Sydney. What was the truth about a dry and a damp climate? His experiences of the disease, particularly among nurses, inclined him to the opinion that dampness had a good deal to do with the disease. Many nurses complained of rheumatic pains of sufficient severity to cause them to go off duty. He had advised these nurses to go to higher ground, away from the sea. They secured places in hospitals in inland, dry areas and remained free from pain. Dr. Millard questioned whether the health officer could do much to improve the position.

Dr. Plomley had spoken of smouldering rheumatism. He would like to know what the pathology of this affection was. What was it that smouldered?

The association of scarlet fever and rheumatism had not been mentioned. There was also the association of scarlet fever and heart disease. It had been noted that heart affections were unusually common among patients suffering from scarlet fever in the present epidemic prevalence. The question had been raised whether rheumatism was as bad as it had been in previous times. If it were not so severe, this might be due to the almost universal use of salicylates.

In the last place he wished to refer to Dr. McDonald's remarks about the standardization of hearts. He could not see how a heart could be standardized. Each case had to be treated on its merits.

In his reply Dr. Plomley told Dr. Arthur that he could not speak with authority in regard to the deficiency of vitamins in the diet as a possible cause of rheumatism. He conceived that anything that tended to lower resistance, must render children more liable to rheumatic infections. On the other hand the disease was exceedingly common among children whose diet was in no wise deficient. He admitted that when the tonsils were badly infected, they should be removed. But he emphasized that in his experience after tonsils had been removed, rheumatic sore throats were not uncommon. He did not believe that septic teeth had much to do with the development of rheumatic infection. In regard to damp and cold as ætiological factors, he held that they might bring the symptoms into view in a child who was already infected, but they would not cause the infection. The nervous child and the stuttering child met with in the out-patient department nearly always proved to be rheumatic. In reply to Dr. Millard he pointed out that he had used the term "smouldering" to indicate a chronic infection always ready to flare up and become active with or without apparent cause. He did not know what the pathology of this condition was. It might be a reinfection or merely a relapse.

Dr. McDonald agreed with Dr. Macdonald Gill concerning the liability of syphilis to cause cardiac failure in middle and later life. He had not dealt with this matter, as the subject for discussion was rheumatic disease. From the prophylactic point of view they should attack in the campaign against heart disease not only syphilitic infection, but arteriosclerotic conditions as well. In regard to the term "standardization of the heart," he had not meant that he regarded this as a practical matter. In fact he had contrasted political attempts to standardize labour and the hours of labour with the hopelessness of efforts to standardize illness and the sufferers therefrom. In disease study of the individual was paramount and the cardiac cripple could not be made to conform to a basic standard of work. He had endeavoured to point out that no legislation had been introduced to assist the invalid. Nor was medical organization as advanced as it should be. There was no heart clinic; they had tuberculosis clinics and venereal disease clinics, but none for the cardiac patient. He maintained that a thorough inquiry into the subject was needed. The whole subject of cardiovascular disease was an enticing problem in preventive medicine and hygiene.

Dr. Harvey Sutton said that he had not got far enough to attempt to probe into deeper questions of ætiology of these rheumatic affections. In regard to the influence of diet, he remarked that the incidence of heart disease in acute rheumatism was probably determined by environmental conditions, but the actual infection was not environmental in origin. It was a strange commentary on the suggestion that acute rheumatism was due to septic teeth that the ninety-nine rheumatic heart children to whom he had referred, had better teeth than the average child. The frequency of dental sepsis among the rheumatic children was only one-third of that among all school children. In order to safeguard the hearts of the whole population, he advised the examination of every child during the thirteenth year of life. As a result of this examination the affected children could be advised as to a suitable occupation. Dr. Sutton stated that among his ninety-nine children, only three had had scarlet fever, as far as had been ascertained. It was extremely difficult to determine what form the propaganda should take. It would be wrong to frighten the parents. All warnings and advice must be given with care and due consideration of the understanding of the parents.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Women's Hospital, Melbourne, on July 22, 1926. The meeting took the form of a series of clinical demonstrations by members of the honorary staff.

Albuminuria of Pregnancy.

DR. J. S. GREEN discussed the management of three patients who had become affected by albuminuria during pregnancy.

The first, a *primipara*, aged twenty-nine years, had been four months pregnant. She had exhibited headache, vomiting and dimness of vision. There had been much albumin in the urine, a blood pressure of 210 millimetres of mercury and ocular examination disclosed papillœdema, exudative retinitis and retinal hæmorrhages.

Good results have been obtained by renal function tests, but it had been deemed advisable to induce premature labour. The albumin had cleared from the urine in dramatic fashion and almost at once the systolic blood pressure had fallen to 160 millimetres of mercury.

It appeared that in spite of the normal readings obtained in the renal function tests this patient's kidneys were definitely damaged for ocular signs and a degree of albuminuria were persistent one month after evacuation of the uterus.

The second patient, aged thirty-two years, was six months advanced in her fourth pregnancy. She had had five convulsions prior to her admission when the urine contained only a trace of albumin and the systolic blood pressure was 190 millimetres of mercury. Apart from the convulsions the patient had not been aware of any ill health. With the patient under observation in hospital it was noted that the uterus did not increase in size. Radiographic examination had revealed overriding of the cranial bones at the sutures characteristic of a dead fœtus. At the time of the meeting no albumin could be detected in the urine.

Dr. Green said that the points of interest were the early development of convulsions and the diagnosis of the death of the fœtus by X ray examination.

Dr. Green's third patient was a woman, aged twenty-seven years, a *primipara*, pregnant seven months. She had suffered with headache, vomiting and failing vision and had displayed much œdema. The amount of albumin in the urine was such as to render the contents of the test tube apparently solid in the performance of the ordinary heat and acetic acid test. The systolic blood pressure was 180 millimetres of mercury.

Although this patient had had fifteen seizures on the day of admission the eclamptic condition was treated very conservatively. At the end of nine days albumin had dis-

appeared from the urine and the blood pressure had fallen to 110 millimetres of mercury. Under observation the fundus of the uterus had receded and at the period of pregnancy estimated as seven and a half months, it was on a level with the umbilicus. The X ray report had been to the effect that no fœtus could be detected. The patient was subsequently delivered of a macerated fœtus, one kilogram in weight. It appeared that death of the fœtus had occurred before calcification in the bones had advanced sufficiently to make them visible by X rays.

Placenta Prævia.

DR. W. IVAN HAYES showed a woman, aged twenty-six years, whose pregnancy, her sixth, had been interrupted by *ante partum* hæmorrhage. Her last menstrual period had occurred on October 1, 1925. There had been a small loss of blood in May, 1926, and a profuse loss in June, the hæmorrhage continuing intermittently until the patient's admission to the Women's Hospital on July 2. The presence of a marginal *placenta prævia* had been determined by vaginal examination and it was observed that the *os uteri* was sufficiently dilated to permit of the passage of three fingers. Internal version had been performed, a leg brought down and a still-born child was born in forty-five minutes. A mild degree of sapræmia had supervened, but this patient was well enough to be discharged from hospital in three weeks.

Accidental Hæmorrhage.

Dr. Hayes's second patient was a woman, aged thirty-five years, who had become pregnant for the second time. Her last menstrual period was dated as November 24, 1925, and she had remained well until July 12, 1926, when she became worried on account of the fact that she had not felt any fœtal movements for two days. She had then experienced severe abdominal pain and noticed that her abdomen was enlarging. Hæmorrhage from the vagina had occurred after the pain had continued for six hours.

At the time of her admission to the Women's Hospital the patient's pulse rate had been 100 per minute and her systolic blood pressure 140 millimetres of mercury. There was a very large amount of albumin in the urine and an estimation of the blood urea gave a reading of 60 milligrammes per hundred cubic centimetres of blood. The uterus had extended to the xiphisternum, was very tender and of a wooden consistence, no contractions or fœtal parts being palpable and the fœtal heart sounds being inaudible. It had not been possible to locate the placenta by palpation *per vaginam*.

It was decided to perform Cæsarean section, the operation being undertaken twelve hours after the occurrence of the first symptom. As the uterus had failed to contract after the application of hot packs and massage for twenty minutes, it was removed by supravaginal amputation. The patient's convalescence had been uneventful.

Dr. Hayes also showed a primiparous woman, aged twenty-six years. Her last menstrual period had occurred on November 28, 1925. Fourteen days prior to her admission to the Women's Hospital on July 11, 1926, the patient had sustained a fall and when first seen she had been losing blood from the vagina for two days; her pulse rate was 116, the systolic blood pressure 190 millimetres of mercury and the urine had contained an extremely large amount of albumin.

As slight uterine pains had been present she was kept under observation for seven days at the end of which time she was delivered naturally of a macerated child weighing 2·5 kilograms. At the time of delivery the urine had contained a trace of albumin only and the blood pressure had declined to 125. A mild degree of sapræmia had occurred during convalescence.

Puerperal Sepsis.

DR. EDWARD WHITE invited discussion on the condition of a woman who after her confinement outside the hospital had been admitted suffering from pelvic peritonitis. Although it appeared at first that a general peritonitis was likely to develope, the inflammatory process had remained localized in the pelvis. A blood culture carried out at this stage had not resulted in the recovery of any significant organism.

After some days a tense tender fluctuant mass had appeared in the right iliac region. An incision had been made at a point well above Poupart's ligament and a drainage tube inserted, after which the patient's temperature rapidly fell. Dr. White discussed the abdominal signs of pelvic peritonitis.

The second patient also furnished an example of pelvic peritonitis which threatened to become general; the infection had followed on a recent abortion. A tender fluctuant mass had been palpated *per vaginam*. By means of posterior colpotomy much pus had been evacuated and from this *Bacillus coli* and diplococci were recovered by bacteriological examination. This patient still manifested well defined signs of a localized pelvic peritonitis.

In the third instance Dr. White discussed the clinical features in a patient who was the subject of puerperal septicæmia. She was then convalescent. Her record was interesting for three reasons. In the first place the hæmic infection had occurred nearly five weeks after her confinement which had been conducted outside the hospital. The infecting organism had been the *Streptococcus hæmolyticus*. Secondly, she was well after three weeks of very acute illness and thirdly, her recovery was considered to be due to the use of "Mercurochrome."

This patient had received four intravenous injections of a 1% solution of "Mercurochrome soluble 220," namely, 23, 30, 30 and 30 cubic centimetres. Eleven days after admission it had not been possible to cultivate any organisms from the blood by the technique which had formerly recovered them. The temperature charts were exhibited.

Dr. White also showed the temperature charts of another patient who had become affected by infection due to the *Streptococcus hæmolyticus* after abortion. This patient was convalescent after two months of severe illness. She had received five intravenous injections of "Mercurochrome." A chart of another patient with septicæmia due to *Streptococcus hæmolyticus* which superevened on abortion, showed that one intravenous injection of "Mercurochrome" had reduced the temperature permanently and that with almost dramatic suddenness the patient had become convalescent.

Dr. White mentioned that of the last seven patients admitted to the Women's Hospital suffering from septicæmia, the clinical diagnosis of which was confirmed by blood culture, five had recovered. He considered that this was an extraordinary record and that it was due mainly to the use of "Mercurochrome." It was a powerful drug and his experience of it had not always been so fortunate. He discussed the technique of injection and remarked that the severe and prostrating reactions were being overcome. The most serious risk was that of causing an acute nephritis. It was therefore necessary to test the renal function before and after an injection.

Ovarian Teratomata.

DR. TATE SUTHERLAND showed two teratomatous cysts of the ovary which he had secured recently in the course of operative work. The first was obtained from a primiparous woman in the fourth month of pregnancy. It was associated with a large, pedunculated subperitoneal fibromyoma, so situated on the posterior wall of the pelvis as to block the pelvic opening. Both fibromyoma and teratoma were removed without any disturbance of pregnancy. The second specimen, of remarkably large size, was from a patient aged fifty-nine years.

Dr. Sutherland pointed out that these teratomatous tumours seldom interfered with the mechanism of pregnancy, but he was of opinion that when discovered the best and safest course was to remove them, if the pregnancy had not progressed further than five months.

Injury to the Bladder.

DR. ALLEN ROBERTSON demonstrated an apparatus which he had had made for a young married woman, *ætatis* twenty-four years, who through severe trauma at delivery

had been injured to such an extent that the anterior vaginal wall, the whole of the urethra and base of the bladder had sloughed away with the result that the interior of the bladder protruded into the vagina. He had repaired the bladder, but of necessity there remained a fistulous opening for the escape of urine. The apparatus, made of light metal, fitted into the vagina much as a pessary would do and caught the urine which ran off by means of a small outlet connected by rubber tubing into a urinal attached to the inner side of the thigh. This ambulatory apparatus enabled the patient to get about in comparative comfort and was the alternative to the transplantation of the ureters.

Uterine Hæmorrhage.

Dr. Robertson also presented a case of a girl, fifteen years of age, who complained of continuous uterine hæmorrhage which had been present since menstruation started. Two sisters previously had given a similar history. There were no evidences of hyperthyreoidism, pernicious anæmia or specific disease and there were no indications of any local condition to cause the bleeding. Prior to his taking charge of the case she had been treated with calcium lactate and pituitrin and rest in bed, but with no benefit. She had been put on hypodermic injections of sodium cacodylate, 0·5 cubic centimetres, every second day and had been given a mixture of potassium chlorate, 0·6 gramme (ten grains), with liquid extract of ergot, one cubic centimetres (fifteen minims), three times a day and had been kept at rest in bed with a liberal diet. After a week there had been considerable improvement, the appetite and colour being most noticeable and the bleeding after ten days had ceased. At the end of three weeks the patient had been allowed to get up and being able to walk, left the hospital apparently quite well. A mixture of iron, arsenic and strychnine had been prescribed for her and she had been "impressed with the necessity of imbibing fresh air and sunshine with a liberal intake of plain fresh food."

Tuberculous Salpingitis and Peritonitis.

The next patient shown by Dr. Robertson was of special interest from the point of maldevelopment of generative organs. She was suffering from tuberculous salpingitis and tuberculous peritonitis of adhesive type complicated by an abnormally placed kidney on the left side and absence of tube, ovary and round ligament on the same side. She had an infantile type of vagina and uterus.

The patient, aged thirty years, had been admitted to hospital complaining of long standing pain in the middle and lower parts of the abdomen with flatulent indigestion. There was a history of hæmoptysis and general ill health ten years previously. At operation all the abdominal organs had been found glued together with adhesions; the right tube, greatly distended, was removed and found to be filled with caseous material; it was separated with care from the right ovary, as on examination of the left side it was found that the tube, ovary and round ligament were absent. The left kidney was found to be lying over the pelvic brim firmly in position, about three-quarters of it lying closely along the medial side of the pelvic wall. The patient had not stood the operation well and caused some anxiety for the first twenty-four hours, but after that had improved. A pathological report had been received to the effect that the tube was tuberculous.

Tubo-Ovarian Abscess.

The condition of another patient shown by Dr. Robertson was interesting from the point of diagnosis between inflammatory mass and ectopic pregnancy. The patient was thirty-four years of age and had been operated upon four years previously for ectopic pregnancy, prior to which she had had two living children and one miscarriage.

The history of the present illness was the sudden onset of pain in the left side of the lower part of the abdomen with slight loss of blood *per vaginam* at a time when the menstrual period was expected. The patient went to bed and remained there for three weeks, the pain remained, but the bleeding ceased; then suddenly the pain became more severe accompanied by the passage of clots *per vaginam*. At this time she was sent into hospital and on admission was in great pain with a distended abdomen and passing clots freely by the vagina. On examination the vagina had been full of blood clot, the cervix soft and pushed forward; the *fundus uteri* could not be palpated, but a soft nodular mass was felt in the left and posterior fornix. The temperature had been 37·8° C. (100° F.) and the pulse rate 116 in the minute.

Under general anæsthesia the abdomen had been opened and purulent fluid had escaped. A left sided tubo-ovarian abscess had been removed after separation from adjacent structures. The peritoneal cavity had been carefully cleaned and drainage provided. The patient had picked up remarkably well the next day, but the following day was not doing satisfactorily and continued so until posterior colpotomy was performed and a drainage tube put in position with gauze on either side. After this she had gradually improved and made rapid progress to convalescence and at the time of demonstration she was very well.

Dr. Robertson said that the pus had not been examined, but many of these infections were Neisserian with a superadded infection by some other organism.

Fracture of the Larynx.

Dr. Robertson also seized upon the opportunity of showing a patient who had met with the very unusual accident of fracture of the larynx. She was a woman of sixty-eight years of age and whilst sitting on the cross seat of an electric tram which collided with another car, had been thrown forward on to the back of the seat in front, striking the top of it with her neck. She had felt severe pain in the neck, could only speak with a whisper and could swallow only with difficulty owing to the pain.

The skiagram shown was taken by Dr. Colin Macdonald and revealed a fracture of the left side of the larynx. The interior of the larynx examined with the laryngoscope was red and swollen.

Under local anæsthesia an operation had been performed and the fragments brought together with chromacized gut sutures. The lower fragment with the lesser cornua attached had been found displaced dorso-medially on to the œsophagus, thus obstructing the passage of food and causing some degree of discomfort. She had gradually improved and four weeks afterwards was recovering her voice and could swallow food without any difficulty.

Ovarian Cyst.

DR. EDWARD R. WHITE showed specimens which he had recently obtained at operation. The first was from a nulliparous woman, aged thirty-nine years, who had suffered much pain in the lower portion of the abdomen. The large ovarian cyst exhibited which contained six hundred and sixty cubic centimetres of chocolate coloured fluid, had been found at operation to be very adherent to surrounding structures. It had been removed with the uterus; the uterus contained two myomata. No microscopical evidence of endometrioma could be discerned in a histological section.

The second specimen was from a woman, aged twenty-seven years, who had suffered severe dysmenorrhœa and was sterile after five years' marriage. The uterus and Fallopian tubes were normal, but both ovaries were cystic, enlarged to at least four times their normal size, prolapsed and adherent in the pouch of Douglas. During separation of the adhesions on the right side chocolate coloured fluid had escaped. The right ovary had been removed and the cystic portion of the left resected, the blood supply of the remainder being carefully conserved. In the patient from whom this specimen was obtained, the clinical findings were very suggestive of endometrioma of the ovaries, but the pathological finding was one of multiple ovarian cysts.

Endometrial Adenomata.

Dr. White also exhibited specimens from a single woman, aged twenty-eight years. She had suffered from severe and intractable dysmenorrhœa. By vaginal examination a

small anteflexed uterus could be felt and two myomata distinguished. After dilatation of the cervix laparotomy had been performed and the tumours removed. They proved by Dr. Mollison's examination to be two endometrial adenomata and lay outside and quite distinct from the uterus on either side, just underneath the utero-vesical fold of peritoneum and adherent to the round ligament. Both ovaries were slightly enlarged and contained multiple retention cysts. This patient was completely relieved.

Dr. White then described the clinical signs and supposed origin of the chocolate cysts of Sampson or endometrioma of the ovary of Blair Bell.

The Pelvic Fascia.

DR. W. G. CUSCADEN demonstrated from a dissection of the pelvic fascia. He said that during many years in the Out-patient Department of the Women's Hospital he had rarely found a student who understood anything about the pelvic fascia. The rudiments of gynæcology were impossible without this knowledge. The average student seemed to think that the uterus was held up by the round ligaments or the broad ligaments, the one a mesentery and the other probably only a vestigial remnant.

The pelvic cellular tissue was exposed when the peritoneum was stripped and was continuous with the subperitoneal tissue of the abdominal cavity. It formed the supporting tissue for a large number of vessels and nerves which passed to viscera. It was most abundant in relation to the cervix and formed the parametrium of Virchow. The anatomist described a parietal and visceral layer, but the parietal portion covering the *pyriformis* and *obturator internus* muscles was of little interest. The diaphragmatic portion covered both surfaces of the *levator ani*, that on the caudal surface being the thin anal fascia. The layer on the upper surface was attached to the symphysis on its posterior aspect, about two centimetres above its lower border, proceeded laterally over the obturator fascia to the ischial spine. The irregularity of the line was due to the slipping down of the *levatores ani* in man; in lower animals they were attached to the pelvic brim.

Different portions of the fascia received different names. The lateral portions extended from the cervico-vaginal junction to the lateral wall of the pelvis. They were wedge-shaped and their thickest portions formed a sheath on either side for the uterine arteries. They were called Mackenrodt's ligaments, also transverse ligaments and cardinal ligaments. The uterus would not come up freely in abdominal hysterectomy or down in vaginal hysterectomy until these ligaments were cut. No descent of the uterus could take place while they were intact. No operation for descent which did not shorten them, was sound.

The pubo-cervical ligament extended from the posterior surface of the pubic bone to the cervico-vaginal junction. It was as could be seen in the dissection quite a stout structure, reinforced on either side of the median line. It was very muscular and was called by some the pubo-cervical muscle. Laterally it was continued over the ureter and formed the thin roof of the ureteric canal.

Cystocele was a hernia of the bladder through the pubo-cervical muscle. The tear occasioned by child-birth was usually transverse. An operation for cystocele therefore required a dissection to expose the rent in the muscle and accurate suturing of its edges. The cutting of diamonds and triangles from the vagina was of no avail if the fascia were not sutured.

The *fascia propria* of the rectum was also demonstrated well in Dr. Cuscaden's dissection. Without a rent in this fascia there could be no rectocele. A common sight among out-patients was recurrent rectocele in spite of a good perineorraphy. This was due to failure to dissect out the fascia and accurately suture the edges of the rent, a necessary procedure in all operations for rectocele.

Abnormal Generative Organs.

Dr. Cuscaden detailed the history of a patient who was admitted to the Women's Hospital suffering from appendicitis. She had been operated upon and did well. The state of the sexual organs was discovered in the course of the preliminary examination and they were sufficiently interesting to record.

A glance at the vulva showed the median raphé, and closer inspection revealed an enormously dilated urethra which permitted the introduction of two fingers. The *sphincter vesicæ* was intact and the patient experienced no difficulty in controlling her urine. The distance from the external urethral orifice to the sphincter was about ten centimetres. There was no vestige of a vagina. Nothing abnormal appeared on rectal examination. At the time of the operation for appendicitis an incision through the right rectus muscle had been chosen in order to give an opportunity of inspecting the pelvic organs. The peritoneum was reflected off the front and sides of the rectum over the bladder. An ill-defined sacro-genital fold crossed the middle fossa. There was no evidence of sex organs of any kind. A careful search of the infrarenal and inguinal regions failed to show any evidence of sex glands.

Dr. Cuscaden showed a photograph which demonstrated that this patient had a female type of pelvis. There was no mammary development and the axillary and pubic hair was scanty. There was no growth of hair on the face or legs. The voice was deep and masculine in type. The patient claimed to have periodic hæmorrhage (? menstruation) but none was observed during her stay in hospital. She was engaged to be married and said that her fiancé had had repeated intercourse, apparently using the urethra for that purpose. She was told of her condition, but asserted that she intended to get married. She had disappeared and could not be traced.

Double Uterus.

DR. ARTHUR SHERWIN demonstrated by the aid of sketches and skiagrams a case of double uterus. The patient, a nulliparous woman, twenty-six years of age, had sought relief for dysmenorrhœa of extreme severity.

On examination a septum had been found extending from the external *os* dividing the vagina into two separate compartments. At the vaginal vault two *osses uteri* were demonstrated, each admitting a sound passing outwards to the right and left iliac fossæ respectively for about 6·25 centimetres (two and a half inches). Bimanual examination had revealed two pear-shaped tumours lying laterally in the pelvis.

The patient had been placed in the lithotomy position and the vaginal septum had been excised. Each *os* was dilated and by excising the intervening portion a single *os* was constructed. The abdomen was then opened and the two uteri each with its tube and ovary demonstrated. The two uteri were symmetrical and running between bladder and rectum was a well marked fold of peritoneum, the recto-vesical ligament. This had been excised and also the inner portion of each uterus, the remaining halves were stitched together with chromic gut sutres. Except for a brisk vaginal hæmorrhage on the fourteenth and seventeenth days the patient had made an uninterrupted recovery.

Two months after the operation a "Lipiodol" solution had been injected through the single *os* into the uterus and the films taken revealed a uterus of normal size in the mid line with patent tubes leading from the cornua.

The patient had had three menstrual periods since the operation with little or no discomfort.

Ovarian Cyst and Pregnancy.

DR. N. LENNOX SPEIRS discussed the case of a woman in whom the presence of an ovarian cyst complicated pregnancy of six months duration. He considered that attention was to be given to the following possibilities: (i.) The risk of the pedicle of the cyst becoming twisted; this would necessitate an immediate laparotomy. (ii.) The likelihood of injury to the cyst during labour. (iii.) The probable increase in size of the cyst as a result of the increased blood supply which it would obtain as pregnancy advanced. This development had been well illustrated in the patient in question up to date.

Decision had to be made as between operative and non-operative treatment. If operative treatment were undertaken, it involved the risk of a weak scar and subsequent hernia during labour. There was also the risk of premature termination of the pregnancy, an event which happened in

about 20% of such patients subjected to operation. If the cyst were in the broad ligament the likelihood of premature labour would be greater on account of the increased trauma occasioned by the operation, involving injury to the uterine veins and possibly to the uterus itself. It was hardly necessary to operate when the cyst was small in size and situated well above the pelvis as in the patient under discussion. The presence of general adhesions and very great abdominal distension with consequent liability to œdema of the lungs were contraindications to operation. In such circumstances the better course would be to tap the cyst and remove it after the termination of pregnancy. Everything depended on the position of the cyst. If it were below the presenting part operation was indicated as the cyst would be a cause of dystocia; if above the presenting part the cyst might be left. If it were impacted in the pelvis, Cæsarean section might be necessary to liberate the tumour.

It was to be remembered that during the puerperium torsion of the pedicle of the cyst was very likely to occur and infection of the cyst might follow its injury during labour.

Radiology in Obstetrics.

DR. COLIN MACDONALD gave a demonstration of obstetric radiograms. Though a *fœtus in utero* had been seen on an X ray plate as early as 1897 by Levy Dorn, it was not until a few years previously with the advent of improved technique that this branch of radiography had become of definite value. Attention was drawn to the technical difficulties of obstetric radiography, namely, the amniotic fluid, the thick uterine walls, the fœtal movements, the poor calcium content of the fœtal skeleton and the distance of the fœtus from the film. It was suggested that the arrival of the new one hundred milliampère tube would facilitate results. While theoretically the fœtus should be demonstrated about the tenth week when the lower dorsal vertebræ were commencing to ossify, it was rare to achieve positive results before mid term. The methods of diagnosing pregnancy by radiography that had been used up to the present, were: (i.) The ordinary method, which depended on the demonstration of the fœtal skeleton; (ii.) pneumo-peritoneal radiography which enabled an enlarged uterus to be seen; (iii.) the unique technique described by Dr. Carlos Heuser at the International Congress of Radiology held in London last year. Heuser claimed that he could by radiography diagnose a pregnant uterus of the sixth to eighth week, before the *decidua reflexa* had fused with the *decidua vera*, by injecting "Lipiodol" into the uterine cavity which when pregnant caused a "filling defect." Heuser also made the extraordinary claim of especial interest to obstetricians that in none of his cases had the "Lipiodol" injection resulted in subsequent abortion. Dr. Macdonald had no experience either with pneumoperitoneum or with "Lipiodol" in the above connexion.

Skiagrams were exhibited showing vertex and breech presentations at term, four and a half months fœtus, overlapping of the cranial bones indicating fœtal death and contracted pelves.

Radium Treatment.

A short analysis was presented of the results of radium treatment at the Women's Hospital during the previous six years. Over one hundred and fifty patients had been so treated, the great majority of whom had suffered from inoperable cervical carcinoma. The technique that had been used during this time was one hundred milligrammes of radium bromide filtered through one millimetre of brass with one millimetre of aluminium in addition to the 0·5 millimetre of silver of the protective capsule. The radium was placed in the vaginal fornices for forty hours.

Almost invariably discharge and hæmorrhage were favourably influenced and very often pain, though a prolongation of life had not always been achieved. Mention was made of the successful results obtained in this condition by Claude Regaud, of the Paris Radium Institute, who favoured buried radium needles of small dosage, heavily filtered and applied for six to ten days.

A *nullipara*, aged thirty years, was shown. A large rapidly growing cauliflower type of cervical carcinoma had been considered inoperable eighteen months previously. Dr. Mollison had confirmed the diagnosis by cutting a section. She had subsequently had two applications of radium with the usual hospital technique at an interval of three months followed by high voltage X ray therapy. At the time of demonstration the patient had no symptoms, felt perfectly well and all that could be felt was a slight thickening of the vault.

Insufflation of the Fallopian Tubes.

DR. HUBERT JACOBS demonstrated Rubin's apparatus for transuterine insufflation of the Fallopian tubes. The determination of their patency or occlusion was essential in the investigation of any case of sterility and it was also of great value in allied gynæcological conditions. Hence no operation should be performed in a case of sterility without this preliminary test. It was obvious that in patients with stenosed tubes operations such as curettage, intubation, correction of a symptomless retrodisplacement of the uterus and mutilating operations on the cervix were not only useless but quite unscientific.

It was essential that the test should be performed by a competent observer who would have due regard for proper technique and the indications and contraindications. If carried out in this way there were no complications or sequelæ to arise.

Contracted Pelvis.

Dr. Jacobs also showed three patients suffering from contracted pelvis and discussed the condition of each.

Pathological Specimens.

DR. C. H. MOLLISON showed a series of diverse and interesting pathological specimens.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Robinson, Hubert Edward, M.B., B.S., 1926 (Univ. Melbourne), Elwood.
Brady, Wilfred Arthur, M.B., B.S., 1926 (Univ. Melbourne), St. Kilda.
Crisp, Ernest Reginald, M.B., B.S., 1926 (Univ. Melbourne), Killara, New South Wales.
Davis, Wolfe, M.B., B.S., 1926 (Univ. Melbourne), St. Kilda.
Dawes, Thomas Powell, M.B., B.S., 1925 (Univ. Melbourne), Melbourne Hospital.
Penington, Raymond George, M.B., B.S., 1926 (Univ. Melbourne), Mont Albert.
Powell, Mostyn Levi, M.B., B.S., 1926 (Univ. Melbourne), Caulfield.
Sayle, Thomas Osler, M.B., B.S., 1926 (Univ. Melbourne), Sandringham.
Swain, Alexander Benjamin, M.B., B.S., 1926 (Univ. Melbourne), Preston.
Skinner, Robert Ernest Ralph, M.B., B.S., 1926 (Univ. Melbourne), East Malvern.
Sleeman, James Mitchell, M.B., B.S., 1926 (Univ. Melbourne), Portland.
Strange, Gwendoline Olive, M.B., B.S., 1926 (Univ. Melbourne), Glenroy.
Zacharin, David, M.B., B.S., 1926 (Univ. Melbourne), St. Kilda.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

Dixon, Phillip Vernon, M.B., Ch.M., 1924 (Univ. Sydney), George's River Road, Croydon Park.
Dods, Lorimer Fenton, M.B., Ch.M., 1923 (Univ. Sydney), 333, New South Head Road, Edgecliffe.
Donaldson, William Scott, M.B., Ch.M., 1924 (Univ. Sydney), Lane Cove Road, Gordon.

Findlay, Andrew Parkes, M.B., Ch.M., 1924 (Univ. Sydney), 38, Lang Road, Centennial Park.
Pearlman, Samuel, M.B., 1925 (Univ. Sydney), 436, New Canterbury Road, Dulwich Hill.
Smith, William Cletus, M.B., Ch.M., 1925 (Univ. Sydney), Coast Hospital, Little Bay.
Tipping, Frank, M.B., B.S., 1907 (Univ. Melbourne), Moulamein, New South Wales.

Obituary.

JOHN DRUMMOND NORRIS.

WE regret to announce the death of Dr. John Drummond Norris which occurred at Darwin, Northern Territory, on August 17, 1926.

JOHN IRVINE HUNTER MEMORIAL FUND.

THE following additional subscriptions have been received by the Honorary Treasurers of the John Irvine Hunter Memorial Fund:

	£	s.	d.
Previously acknowledged	2,245	12	0
Dr. Oliver Latham	10	0	0
Anonymous	7	7	0
Professor Robert D. Watt	5	5	0
Dr. Bernard Coen	5	0	0
Professor O. U. Vonwiller	3	3	0
Mrs. A. Stewart (further donation) ..	3	3	0
Professor J. Le Gay Brereton	2	2	0
R. A. Dallen, Esq.	1	1	0
W. R. Browne, Esq.	1	1	0
	£2,283	14	0

WITNESSING OF POSTAL VOTES FOR THE COMMONWEALTH REFERENDA.

THE Chief Electoral Officer for the Commonwealth desires that the attention of all medical practitioners shall be directed to the duties and obligations of authorized witnesses in connexion with postal voting at the forthcoming referenda.

Medical practitioners who are called upon to witness an application for a postal ballot paper or a postal vote certificate, should, when so called upon, observe the obligations of authorized witnesses which are clearly set out on the back of the form of application or the directions relating to authorized witnesses printed on the back of the postal ballot paper. They must comply with the prescribed procedure.

Medical Appointments.

A NEW position of Assistant Medical Officer to the New South Wales Government Railways and Tramways has recently been created. The staff now comprises three medical officers. Dr. T. L. O'Reilly has succeeded Dr. George Henry Taylor as Chief Medical Officer. Dr. M. R. Finlayson has been appointed to fill Dr. O'Reilly's position and Dr. Hugh Morris Taylor has secured the newly created position.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx.

LAUNCESTON PUBLIC HOSPITAL: Junior Male Medical Officer.
RENWICK HOSPITAL FOR INFANTS, SUMMER HILL: Honorary Ear, Nose and Throat Surgeon.
SYDNEY HOSPITAL: Honorary Assistant Medical Officer.
THE WOMEN'S HOSPITAL, CROWN STREET, SYDNEY: Junior Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND: Honorary Secretary B.M.A. Building, Adelaide Street, Brisbane.	Brisbane United Friendly Society Institute. Stannary Hills Hospital. Cook District Hospital.
SOUTH AUSTRALIAN: Honorary Secretary, 12, North Terrace, Adelaide.	Contract Practice Appointments at Ceduna, Wudinna (Central Eyre's Peninsula), Murat Bay and other West Coast of South Australia Districts.
WESTERN AUSTRALIAN: Honorary Secretary, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

SEPT. 1.—Victorian Branch, B.M.A.: Branch.
SEPT. 1.—Western Australian Branch, B.M.A.: Council.
SEPT. 2.—South Australian Branch, B.M.A.: Council.
SEPT. 3.—Queensland Branch, B.M.A.: Branch.
SEPT. 7.—Tasmanian Branch, B.M.A.: Council.
SEPT. 8.—New South Wales Branch, B.M.A.: Nomination of Candidates for Federal Committee.
SEPT. 9.—Victorian Branch, B.M.A.: Council.
SEPT. 9.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 10.—Queensland Branch, B.M.A.: Council.
SEPT. 10.—Central Southern Medical Association, New South Wales.
SEPT. 14.—Tasmanian Branch, B.M.A.: Branch.
SEPT. 14.—New South Wales Branch, B.M.A.: Ethics Committee.
SEPT. 14.—Section of Medicine, New South Wales Branch, B.M.A.
SEPT. 15.—Western Australian Branch, B.M.A.: Branch.
SEPT. 15.—Central Northern Medical Association, New South Wales.
SEPT. 15.—South Sydney Medical Association, New South Wales.
SEPT. 15.—Section of Obstetrics and Gynæcology, New South Wales Branch, B.M.A.

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